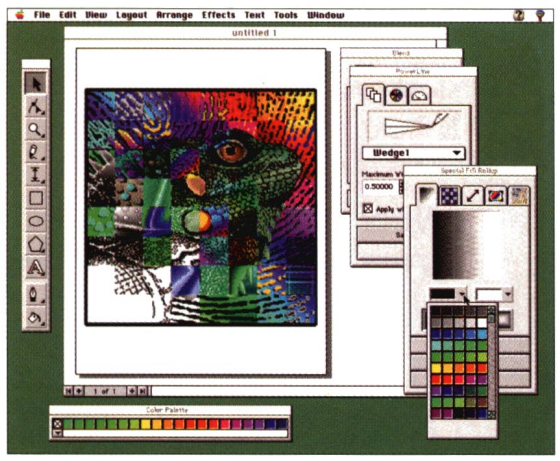
MacWEEK

02.26.96 | *The Newsweekly for Macintosh Managers* | VOLUME 10 NUMBER 8



Cross-platform credentials: Although it offers a Mac-like interface, the drawing component of CorelDraw for the Macintosh suite will feature binary compatibility with the PC version.

Corel drawing closer to Mac: Suite due Q2

By Kristin Balleisen

After years of sketchy designs, Corel Corp. is asserting that its plans to bring CorelDraw to the Mac are now set in stone.

The Mac version of the graphics suite, slated to ship in June, will cost $500 to $600. According to Corel, the package will comprise seven components: CorelDraw 6.0 for illustration; CorelDream 3D for modeling and ray tracing; an as-yet unnamed painting package for image editing; CorelTrace 6 for bit-map-to-vector conversion; a texture program; Corel Multimedia Manager, a cataloging application; and the Master Juggler font- and file-management utility.

See Corel, Page 82

Motorola Macs head for China

Sublicensing rights key to clone deal

By David Morgenstern

Spinning Horace Greeley's advice for success 180 degrees, Apple and its latest licensee, Motorola Inc., see China as the next frontier for the Mac OS. Revenues from the deal could soon change Apple's fortunes.

Coinciding with last week's Chinese New Year celebration, the Tempe, Ariz.-based Motorola Computer Group announced that it had licensed the Mac OS. The broad license is the first that allows a vendor to sublicense the Mac OS to third parties without restrictions or Apple's approval.

"We could be knocking on the same doors," said Steve Bernstein, Apple licensing marketing manager. The agreement will let Motorola offer current Mac designs as well as PowerPC Platform (PPCP) systems that can also run a variety of other operating systems.

Joe Guglielmi, MCG general manager, said the company will offer a PPCP design through third parties in the United States. The motherboards will be similar to the Yosemite prototype Motorola showed at Comdex/Fall '95 in Las Vegas (see 11.27.95, Page 1).

In addition to its U.S. plans, Mo-

See Motorola, Page 84

INSIDE

Photoshop shootout
What are the speed limits of the fastest Mac, Windows NT and Unix systems?
See Reviews, Page 39

Short-run printing
MacWEEK Guide looks at how new technologies can benefit business
See Page 24

Problem Solving
Ad agency J.Walter Thompson brings Live Picture Network into its work flow
See Page 51

GA
Jonathan Seybold takes a long, hard look at Apple
See Page 10

Gateways
Promised next version of ARA nowhere in sight
See Page 16

Apple servers cater to publishing

Net Server 700 shines in early tests

By J.W. Davis

Beta Test

Apple has long offered file and print servers that, in keeping with Macintosh tradition, were simple and easy to use in the extreme. But performance-hungry customers in the publishing world have had to look to Unix boxes from Sun Microsystems Inc., Silicon Graphics Inc. or IBM Corp. for raw speed. Soon these customers will have an alternative bearing a fruit logo.

This week, during Seybold Seminars Boston 96, Apple will announce its second try at Unix servers: the Network Server 500 and 700, previously code-named Shiner LE and HE. According to tests conducted by MacWEEK Labs, these products offer feature sets and performance that far exceed any previous Apple-branded offering. After putting a pre-release Network Server 700 through its paces,

See Shiner, Page 44

AIX boxes prime pump for PPCP

By Clifford Colby

As Apple contends with positioning its first AIX-based machines, the company is already working on a PowerPC Platform upgrade path for the servers, which debuted this week.

The Network Server 500 and 700 are garnering high praise for their utilitarian design. "If network managers designed a server, this is what it would look like," said Chuck Goolsbee, IT director for TPD Publishing Inc. in Seattle and a Network Server beta tester. "If you look at other servers, you are buying a PC with server software."

While the Network Servers are starting life as AIX-only sys-

See Servers, Page 84

Hot picks: Mac products to break ice at Seybold

By MacWEEK staff

While Apple's latest servers promise to put new horsepower under the hood of high-end prepress operations, third-party announcements at this week's Seybold Seminars Boston 96 will soup up Mac publishers' desktop vehicles. Announcements include:

- **Graphics software.** MetaTools Inc. will enter new territory with a sequel to Bryce, its 3-D terrain generator. Bryce 2, due in March for $299, will feature a new interface, including "plop-up" menus; import of DXF (Drawing Interchange File) graphics; and multiple rendering modes.

Amiable Technologies Inc. will ship PhotoPrint Designer, a software suite that includes layout, scanning, color-management, type-control and layout capabili-

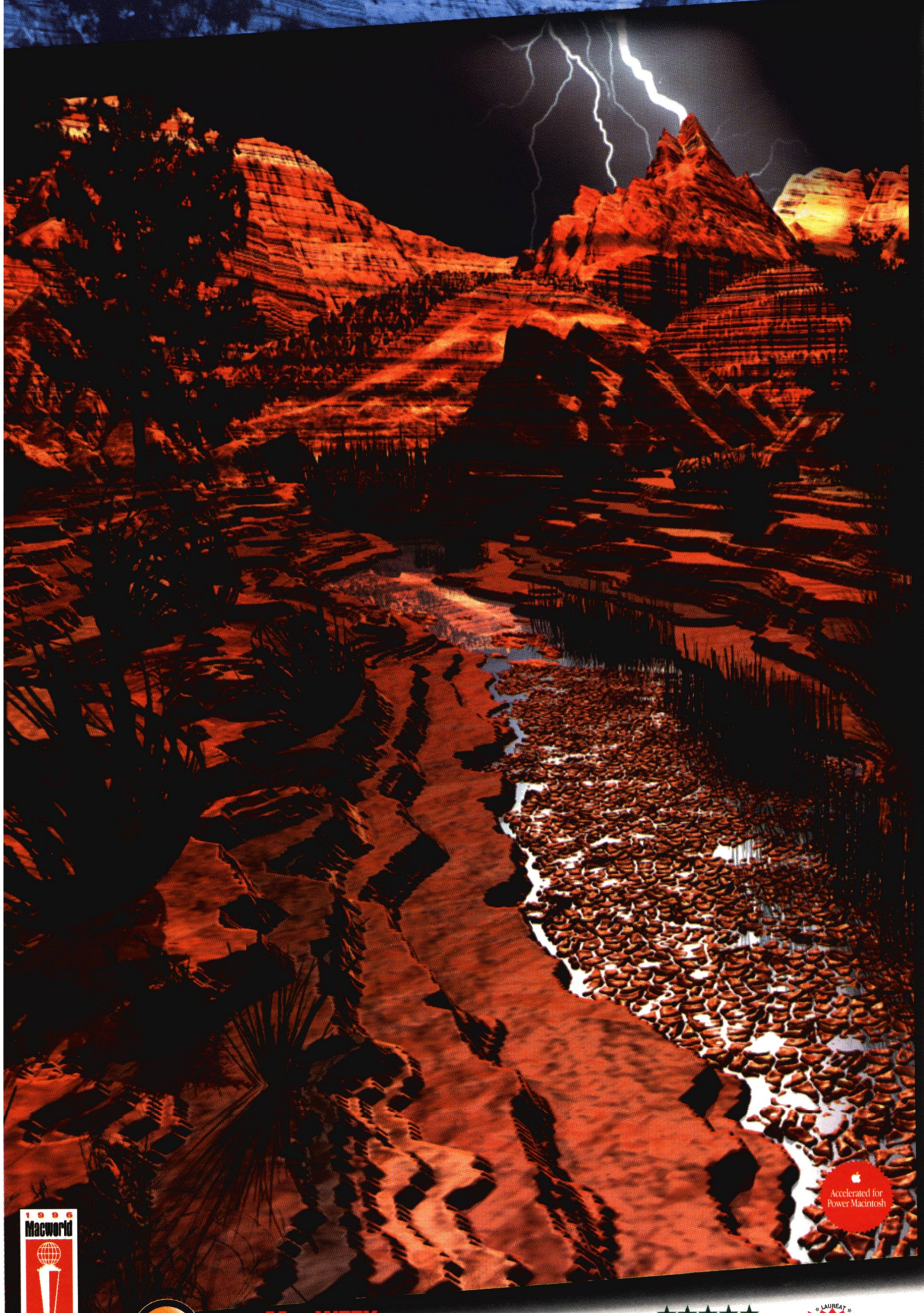
See Seybold, Page 82

Shapes of things to come: The new terrain editor in Version 2 of MetaTools' Bryce will let users reshape mountains on the fly.

NEWSPAPER SECOND CLASS

Bryce Strikes Again!
Upgrade Now for $99!

Bryce 2
HAS ARRIVED!



Powerful 3D Imaging Made Fun!

- Now imports DXF models from Strata, Poser, Infini-D, Ray Dream and more!
- Multiple light sources!
- Boolean rendering!
- Rocks and more new primitives!
- Exclusive real-time Terrain Editor!
- Spectacular helicopter fly-around previews!
- 3D abstract sculpting!
- Faster renders!
- Camera banking!
- Easier-to-use editing controls!
- More than 200 new features and improvements!

MetaTools™

The Visual Computing Software Company

1.800.472.9025

Mention Dept. BW02

Ask about our hands-on Web training!

805.566.6220 fax: 805.566.6367
AOL: metasales@aol.com
http://www.metatools.com

See Bryce 2 unveiled at the MetaTools Digital Theater during Seybold Boston, Feb. 28-March 1, Hynes Convention Center, Booth #1726

©1996 MetaTools, Inc. 6303 Carpinteria Ave., Carpinteria, CA 93013. Bryce and MetaTools are trademarks of MetaTools, Inc. Macintosh is a registered trademark and Power Macintosh is a trademark of Apple Computer, Inc. Used under license. All other product names are trademarks of their respective owners. "Sedona Strike" image created by Chris Casady. Bryce 2 expected to ship on or about March 15, 1996. Offer good for a limited time and is subject to change without notice.

1996 Macworld WORLD CLASS AWARD WINNER

DV AWARD OF EXCELLENCE

MacWEEK

MACWORLD MW ★★★★

★★★★★ Publish

LAUREAT SVM Mac TROPHÉES SVM MAC

MacUser

Macworld UK ★★★★

Publish impact AWARDS '93

MacWEEK

02.26.96 VOLUME 10 NUMBER 8

4 UP FRONT

Apple to unveil PCI servers • Pinnacle faces tough times • Compact Epson camera to shoot for under $600 • ClarisWorks to use OpenDoc

6 NEWS

Adobe puts FrameViewer 5 in picture • Optima's XChange for Windows handles Mac files • Quantum readies new OEM hard drives

10 GA

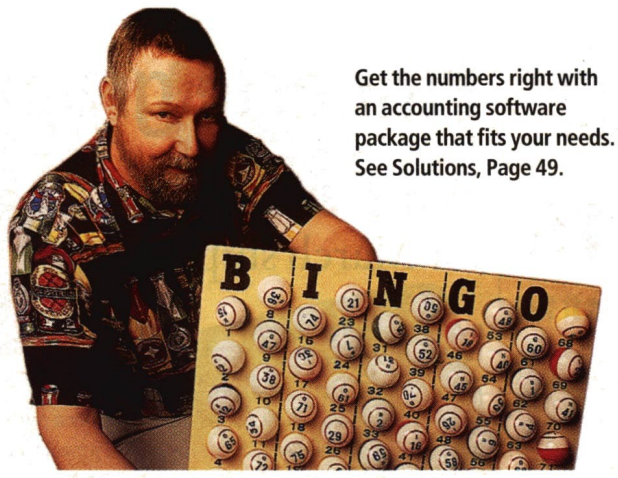
Seybold on Apple • FutureTense gives Mac users taste of Java • BIAS rolls out new audio software • Mirus tones up film recorder

16 GATEWAYS

ARA update won't arrive before year-end • Cabletron to push a new line of Ethernet switches • Working the Net: MacPPP

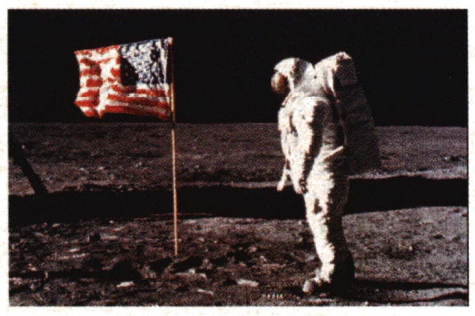
24 SPECIAL REPORT

MacWEEK Guide to Short-run Printing looks at digital publishing and the opportunities it brings to users and vendors.



Get the numbers right with an accounting software package that fits your needs. See Solutions, Page 49.

It's getting buggy inside the Mac OS. Readers share solutions. See MacInTouch, Page 49.



One small step for FrameViewer: Version 5 adds annotation capabilities for FrameMaker documents. See News, Page 6.

39 REVIEWS

Adobe Photoshop shootout: Mac, Windows NT and Unix machines go radius to radius. This time around, the Mac is facing its stiffest competition ever • Beta Test: Apple Network Server 500 and 700

49 SOLUTIONS

The frustration of finding an accounting package that suits specific needs • Problem Solving: Ad agency brings pre-press in-house

DEPARTMENTS & OPINION

16 Working the Net
22 Editorial
22 Second Decade
23 Letters
23 Mac Manager
49 MacInTouch
84 StockWatch
86 Mac The Knife

ALSO INSIDE

52 Mail Order
66 MarketPlace
85 Advertiser Index
85 Product Index

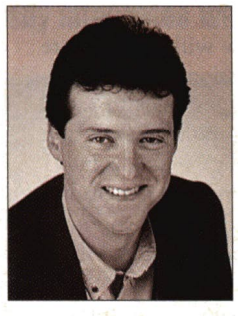
MACWEEK INSIDER JON SWARTZ

Amelio's 1996 campaign

Furious barnstorming across Iowa and New Hampshire, assisted by a deft PR touch, resuscitated the campaign of Republican presidential candidate Lamar Alexander. His strong third-place showing in last week's primary proved that there's always room for a comeback in politics. Just look at Richard Nixon and Bill Clinton.

A continent away, Gilbert Amelio faces an equally stiff challenge in Cupertino. Apple's new chairman and CEO, who knows a thing or two about turnarounds after resurrecting a moribund National Semiconductor Corp., has his work cut out.

Following one of the bleakest stretches in its 20-year history, Apple is literally rotting at the core. Executives are defecting, employees are being laid off, market share is slipping, the company is losing money, developers are jumping to the Windows platform and the media feeding frenzy has been downright rapacious. Even Amelio, on the job only a few weeks, hasn't escaped the Apple bashing: His incentive-laden contract, which could pay him more than $50 million over five years, raised eyebrows.



But Amelio, a self-styled operations man, offered some swift politicking of his own during a get-together with reporters at Apple headquarters this month. He vowed that he plans a housecleaning in his first 100 days of office.

"The troubles that we have are very fixable," Amelio said, adding that he hopes to name a new chief financial officer to replace Joseph Graziano, who quit last fall, and he plans to sign up more partners to license the Mac OS.

On the latter count, Amelio produced as decisively as Ronald Reagan defeated Walter Mondale in the 1984 presidential election. Last week, the company announced an agreement with Motorola Inc. to build Macs in China, its most lucrative cloning partnership thus far. (Although the announcement was Motorola's to make, the chip maker waited until Presidents Day, which coincidentally was Chinese New Year's, to break the news in the United States and China. Bad timing for Apple, which needs all the good PR it can get in light of the media drubbing it has received.)

Whether Amelio delivers as promptly in other areas is as unclear as a Ross Perot position paper. Aside from the onerous chore of returning the company to profitability (Apple already expects a second-quarter loss that some analysts said will top $150 million), he needs to shore up relations with its disgruntled constituents — software developers. The vice president at one company told me: "We get no indication of the direction Apple is heading in. Their focus one day is gone the next, and then back the day after. It's Jekyll and Hyde, and extremely frustrating to make long-term plans around."

Apple needs to position itself as the ease-of-use company for the Internet.

A decisive team led by Amelio also needs to follow the leads of Sun Microsystems Inc. and Netscape Communications Corp. and position itself as the ease-of-use company for the Internet.

There's more: Apple must forecast demand more accurately. It should concentrate on markets where it is dominant, especially in education and publishing. It has to hire a chief operating officer. It should make Amelio more visible than his predecessor, the reclusive Michael Spindler. And it has to increase the amount of Mac software on the shelves of computer dealers.

Finally, Apple needs to dispense with the smug marketing and advertising campaigns that are light on facts and hard-hitting comparisons. More than 20 million worldwide religiously use the Mac. Explain why, Apple.

Amelio's undertaking is huge — but far from impossible. A loyal customer base and $1 billion in the bank are a strong platform for a comeback. But they don't guarantee a quick fix. It will take an unwavering game plan and a persistent message — two traits Apple rarely displayed during the Spindler administration. The Amelio era needs to change that. □

Jon Swartz, MacWEEK business editor, can be reached at jon_swartz@macweek.com.

MacWEEK (ISSN 0892-8118) is published weekly, with the exception of Jan. 1, July 1, Sept. 2, and Dec. 23 and 30, by Ziff-Davis Publishing Co., 1 Park Ave., New York, N.Y. 10016. Single-copy price, including postage: $6. One-year subscription rate: U.S., $125; Canada/Mexico, U.S. $225; International, U.S. $350 (airmail). All orders must be prepaid. Direct **subscription inquiries** to Customer Service Department, MacWEEK, c/o JCI, P.O. Box 10634, Riverton, N.J. 08076-0634; (609) 786-8230. **Changes of address** require that a new application be filled out completely and include both new and old addresses. Allow four to six weeks for processing. We periodically make lists of our customers available to carefully screened mailers of quality goods and services. If you do not wish to receive such mailings, please let us know by writing to us at Customer Service Department, MacWEEK, P.O. Box 10634, Riverton, N.J. 08076-0634. **Postmaster:** Send address changes to MacWEEK, P.O. Box 10634, Riverton, N.J. 08076-0634. Second-class postage paid at New York and additional mailing offices. Printed in U.S.A. Canada Post International Publications Mail Product (Canadian Distribution) Sales Agreement No. 410667. Canadian GST registration number is R140496720.

Apple to debut first PCI servers

By Clifford Colby

Apple will roll out the next round of its Mac OS workgroup servers at this week's Seybold Seminars Boston 96, coinciding with the debut of its Unix servers (see stories, Page 1).

The pair of new machines, due this week, will be Apple's first PCI-based servers. The high-end model, the Workgroup Server 8550, will come with a 132-MHz PowerPC 604 processor and 24 Mbytes of RAM; the lower-end machine, the Workgroup Server 7250, will feature a 120-MHz PowerPC 601 processor and 16 Mbytes of RAM (see 02.05.96, Page 1).

Apple will offer three software bundles with the servers: One will include productivity and administration applications, the second will be tailored for AppleShare functions, and the third will come with software for creating an Internet server.

The new boxes will join Apple's other PowerPC server, the Workgroup Server 6150/66, which shipped last year.

The 6150 is now available only with the Internet software bundle and costs $2,299. □

Servers target 3 areas

Application servers

MODEL	STORAGE	PRICE
7250/120	1.2 GB, 4x CD	$2,889
8550/132	2 GB, 4x CD, DAT	$7,199

AppleShare servers

MODEL	STORAGE	PRICE
7250/120	1.2 GB, 4x CD	$3,719
8550/132	2 GB, 4x CD	$6,879
8550/132	2 GB, 4x CD, DAT	$7,999

Internet servers

MODEL	STORAGE	PRICE
7250/120	1.2 GB, 4x CD	$3,299
8550/132	2 GB, 4x CD	$6,449

Pinnacle grapples with market

Preps 2.6GB MO for March ship

By David Morgenstern

Pinnacle Micro Inc. last week reported fourth-quarter and year-end losses, as well as new magneto-optical developments.

Pinnacle's preliminary year-end results were soured by spending on its forthcoming Apex MO drive and a $1.5 million charge for settling a securities lawsuit. While net sales rose 25 percent from last year, the company posted a year's loss of about $2.6 million, compared with a $2.7 million profit for 1994.

Originally slated to ship in fall 1995, Apex has suffered delays from component shipments and production problems. The company said it will start filling backlogged orders by April.

However, analysts said they expect backlogs to continue into the third quarter and predicted that Pinnacle will take a long time to recoup Apex's high R&D and marketing costs.

Trying to get some cash flow from the Apex R&D, Pinnacle said it plans a March release for Vertex, a 5.25-inch MO drive built from Apex mechanisms that do not meet specifications. Vertex will support ISO-standard 2.6-Gbyte MO cartridges but not 4.6-Gbyte Apex cartridges. It will cost $1,495, $200 less than Apex. Unlike quadruple-speed MO products from other vendors, it will not handle older 1.3-Gbyte and 650-Mbyte cartridges.

Only a purple exterior distinguishes Pinnacle's Vertex drive from its Apex. Vertex, due in March, uses parts that did not meet Apex specifications.

According to analysts, Pinnacle will need to develop new markets for Vertex because it is not backward-compatible. However, its aggressive pricing undercuts competing drives by about $500.

"Pinnacle has pioneered the high-performance optical disk drive, but they've forgotten to check if there's really a market," said Michael Peterson, president of Strategic Research Corp. of Santa Barbara, Calif. "They've tried to emulate the success of Iomega [Corp.] with the Zip drive, but it's not the same market dynamic."

Pinnacle is not the only storage vendor having trouble moving into new markets. Iomega and SyQuest Technology Inc. recently reported financial difficulties and delays with new low-margin products (see 02.12.96, Page 1). "1995 has been a bad year for companies with proprietary rewriteable media," said analyst John Freeman with Strategic Marketing Decisions of Los Gatos, Calif.

Pinnacle Micro Inc. of Irvine, Calif., can be reached at (714) 789-3000 or (800) 553-7070; fax (714) 789-3150; http://www.pinnaclemicro.com. □

ClarisWorks to support OpenDoc

By Jon Swartz

Claris Corp. emphatically hopped aboard the OpenDoc bandwagon last week by announcing that the next version of ClarisWorks will support the component-software architecture.

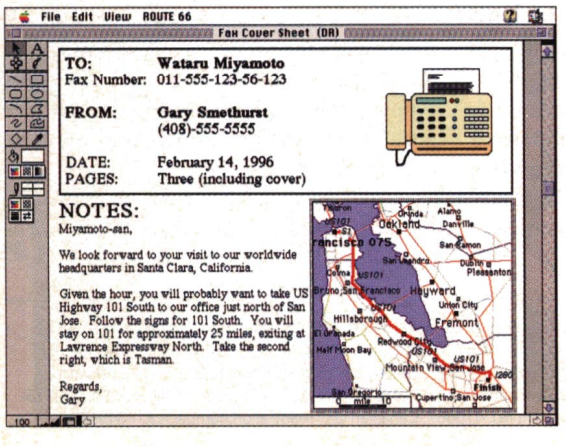
Due at the end of the year, the upgrade to ClarisWorks will not be spliced into components but instead will support embedded OpenDoc parts. The company said the future version of ClarisWorks will let users create customized solutions by embedding OpenDoc parts from a wide variety of developers within its word processing, drawing, spreadsheet and database documents.

Claris said parts will be integrated as frames in ClarisWorks documents via Drag and Drop or a menu command. As OpenDoc-created frames are activated, ClarisWorks will arbitrate its interface, displaying the appropriate menu commands and tool palettes.

Beta tester Rick Yborra, Motorola Inc. director of world marketing information solutions in Phoenix, said the inclusion of OpenDoc on ClarisWorks will help users perform the "critical" task of deploying customized solutions for data access and intranet communications.

Pricing has not been set.

Claris Corp. of Santa Clara, Calif., can be reached at (408) 727-8227 or (800) 544-8554; http://www.claris.com. □


File Edit View ROUTE 66
Fax Cover Sheet (DR)
TO: Wataru Miyamoto
Fax Number: 011-555-123-56-123
FROM: Gary Smethurst
(408)-555-5555
DATE: February 14, 1996
PAGES: Three (including cover)
NOTES:
Miyamoto-san,
We look forward to your visit to our worldwide headquarters in Santa Clara, California.
Given the hour, you will probably want to take US Highway 101 South to our office just north of San Jose. Follow the signs for 101 South. You will stay on 101 for approximately 25 miles, exiting at Lawrence Expressway North. Take the second right, which is Tasman.
Regards,
Gary

Future versions of ClarisWorks will let users create customized solutions by embedding OpenDoc parts within its word processing, drawing, spreadsheet and database documents.

Epson PhotoPC camera weighs less than 1 pound

By Kelly Ryer

Epson America Inc. is the latest imaging company to dive into the photographic pool. The company hopes to make a splash at this week's Seybold Seminars Boston 96 show with its Epson PhotoPC digital camera.

A Windows version of the $599 PhotoPC will ship at Seybold; a Mac version is due in April.

Weighing less than 1 pound, the digital camera will connect to a Mac via a serial cable. According to Epson, the PhotoPC uses a 1/3-inch progressive-scan CCD (charge-coupled device) with square pixels to capture images in 24-bit color.

The camera will incorporate JPEG compression to fit 16 high-resolution images at 640 by 480 pixels or 32 standard-resolution images at 320 by 240 pixels into 1 Mbyte of internal flash memory. An optional 2-Mbyte memory module will be $199; a 4-Mbyte module will be $299.

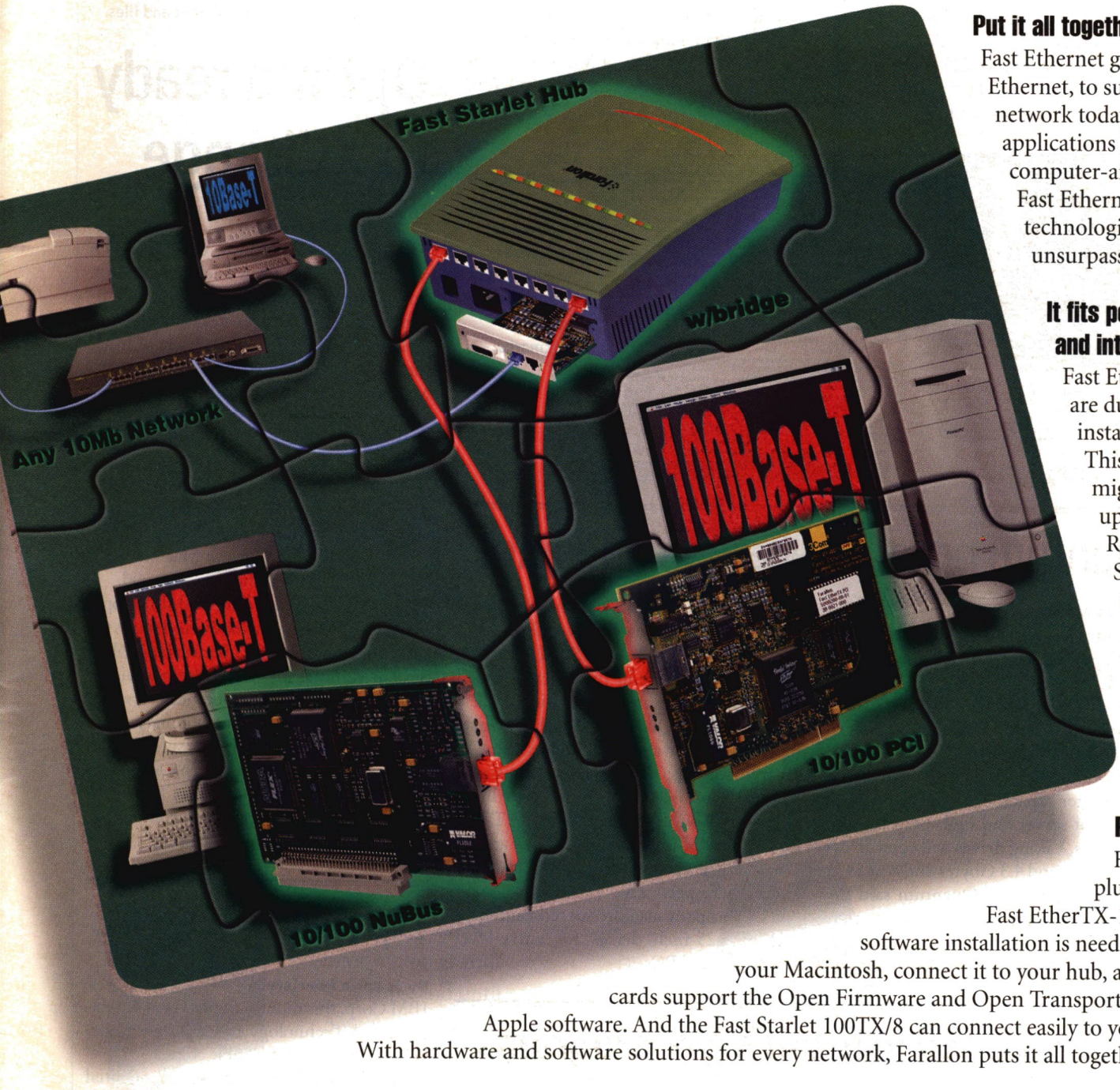
The PhotoPC's autofocus mechanism is equivalent to a 45mm lens on a traditional 35mm camera, with exposures equivalent to ISO 130, the company said. It will accept any standard 37mm video camcorder lens or filter. Two flash modes will illuminate subjects at distances of 3 feet to 10 feet. The camera's LCD control panel will include a self-timer and allow users to erase the last image taken.

The Epson PhotoPC digital camera weighs 1 pound and resembles a film-based point-and-shoot camera.

The Mac version of the PhotoPC will be bundled with Storm Software Inc.'s EasyPhoto application, which enables users to preview, download and edit their images. A plug-in for Adobe Photoshop will be bundled as well.

Epson America Inc. of Torrance, Calif., can be reached at (310) 782-0770 or (800) 289-3776; http://www.epson.com. □

Puzzled by how to speed up your network?



Put it all together with Farallon Fast Ethernet!

Fast Ethernet gives you 10 times the bandwidth of 10Mb Ethernet, to support the higher volumes of traffic on your network today. It's what you need for high-bandwidth applications like multimedia, prepress, graphic arts, computer-aided design, and imaging. Farallon's Fast Ethernet cards and hub are based on top-rated technologies from 3Com and Grand Junction, for unsurpassed 100Base-T performance.

It fits perfectly into your network, today and into the future.

Fast EtherTX-10/100™ cards for PCI and NuBus are dual-speed 10/100 adapters which can be installed on 10Base-T or 100Base-T networks. This flexibility lets you prepare for your migration to 100Base-T, so when you upgrade, your Macs will just plug and play. Ready to upgrade now? Pick up Farallon's Fast Starlet 100TX/8™. This affordable 100Mb 8-port workgroup hub has a unique built-in slot for Farallon's optional 10/100 bridge, so connecting to your 10Base-T network is a snap. This high-performance hub is the only solution that protects your network investment by integrating 10Mb and 100Mb networks.

Putting it together is easier than you think.

Farallon Fast Ethernet gives you true plug-and-play installation in moments. Fast EtherTX-10/100 cards offer built-in drivers, so no software installation is needed. Just plug the NuBus or PCI card into your Macintosh, connect it to your hub, and you're networked! Fast EtherTX-10/100 cards support the Open Firmware and Open Transport standards for compatibility with standard Apple software. And the Fast Starlet 100TX/8 can connect easily to your existing 10Base-T or 100Base-T network. With hardware and software solutions for every network, Farallon puts it all together for you—the right way.

Farallon gives you everything you need to create a Fast Ethernet workgroup that easily integrates with your 10Mb LAN.

Product	Part No.	Estimated Street Price	Available
Fast EtherTX-10/100 PCI	PN994	$249	NOW!
Fast EtherTX-10/100 NuBus	PN990	$329	NOW!
Fast Starlet 100TX/8	PN915/8-1	$1,499	NOW!
w/built-in 10/100 Bridge	PN925/8-1	$2,199	NOW!
Fast 10/100 Bridge	PN925	$999	NOW!

For more information—call today!

Ask for your free copy of Farallon's Fast Ethernet white paper.

1-800-998-7761

Farallon®

http://www.farallon.com

Mac™ OS

yes It runs with NetWare

3Com Parallel Tasking

Smart Plug & Play NETWORK

America Online and AppleLink ID: Farallon; eWorld ID: Farallon50; Internet ID: info@farallon.com;

All trademarks are the property of their respective owners. Copyright © 1995 Farallon Computing, Inc. All rights reserved.

Adobe polishes FrameViewer

By Matthew Rothenberg

Adobe Systems Inc. this month delivered Adobe FrameViewer 5, the latest version of its software for viewing FrameMaker and FrameMaker+SGML documents across platforms.

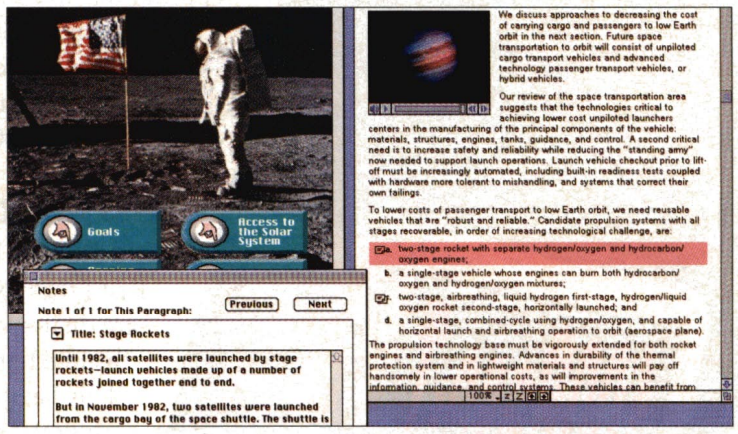
Previously read-only, the software offers new annotation capabilities that let users add private or public bookmarks and notes to FrameMaker documents, Adobe said.

Version 5 features a new tool bar for quick access to a variety of commands, including magnification, copying and navigation. The upgrade also reflows text continuously as users resize windows.

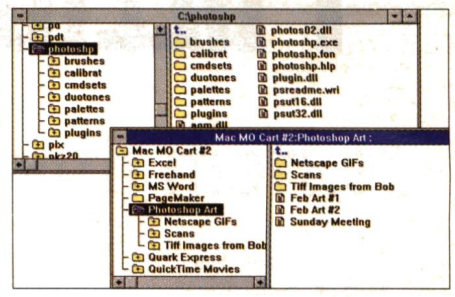
FrameViewer 5 costs $29 for Mac and Windows versions and $195 for Unix. Upgrades for previous Mac and Windows versions are $25 each; an upgrade for Unix is $50.

Adobe also rolled out FrameViewer Retrieval Tools, a developers tool kit designed to let programmers add search capabilities to FrameViewer. The company said the API will let users perform full-text searches on multiple FrameMaker files. It is priced at $3,995 for Power Mac and Windows versions and $4,995 for Unix.

Adobe Systems Inc. of Mountain View, Calif., can be reached at (800) 843-7263; http://www.adobe.com. □


Goals
Access to the Solar System
Notes
Note 1 of 1 for This Paragraph:
Previous
Next
Title: Stage Rockets
Until 1982, all satellites were launched by stage rockets—launch vehicles made up of a number of rockets joined together end to end.
But in November 1982, two satellites were launched from the cargo bay of the space shuttle. The shuttle is
We discuss approaches to decreasing the cost of carrying cargo and passengers to low Earth orbit in the next section. Future space transportation to orbit will consist of unpiloted cargo transport vehicles and advanced technology passenger transport vehicles, or hybrid vehicles.
Our review of the space transportation area suggests that the technologies critical to achieving lower cost unpiloted launchers centers in the manufacturing of the principal components of the vehicle: materials, structures, engines, tanks, guidance, and control. A second critical need is to increase safety and reliability while reducing the "standing army" now needed to support launch operations. Launch vehicle checkout prior to lift-off must be increasingly automated, including built-in readiness tests coupled with hardware more tolerant to mishandling, and systems that correct their own failings.
To lower costs of passenger transport to low Earth orbit, we need reusable vehicles that are "robust and reliable." Candidate propulsion systems with all stages recoverable, in order of increasing technological challenge, are:
a. two-stage rocket with separate hydrogen/oxygen and hydrocarbon/oxygen engines;
b. a single-stage vehicle whose engines can burn both hydrocarbon/oxygen and hydrogen/oxygen mixtures;
c. two-stage, airbreathing, liquid hydrogen first-stage, hydrogen/liquid oxygen rocket second-stage, horizontally launched; and
d. a single-stage, combined-cycle using hydrogen/oxygen, and capable of horizontal launch and airbreathing operation to orbit (aerospace plane).
The propulsion technology base must be vigorously extended for both rocket engines and airbreathing engines. Advances in durability of the thermal protection system and in lightweight materials and structures will pay off handsomely in lower operational costs, as will improvements in the information, guidance, and control systems. These vehicles can benefit from

Adobe FrameViewer 5 lets users add notations to FrameMaker documents as well as private and public bookmarks.



Optima's new XChange file transfer utility for Windows will show the full file name for Mac Hierarchical Filing System volumes and files.

Optima ready to XChange

By David Morgenstern

Aiming to get Windows users in touch with Mac files, Optima Technology Corp. this month will unveil XChange, the company's new Mac file transfer utility.

The $49 software will let users of Intel-standard PC systems read and write to Mac-formatted floppy disks; hard drives; and removable media, including SyQuest-compatible, Iomega Corp.'s Jaz and Zip, and magneto-optical cartridges. The utility will also read Optima's proprietary Desk-Tape and CD-R Access formats for tape and CD-Recordable drives, respectively. Users will be able to format Mac media on Windows machines, the company said.

XChange supports drag-and-drop copying in a File Manager window and shows the full file name for Mac Hierarchical Filing System volumes and files, Optima said. It trims Mac file names automatically and can map Mac files to Windows counterparts as well as add the proper file-type suffix.

Optima Technology Corp. of Irvine, Calif., is at (714) 476-0515; fax (714) 476-0613; marketing@optimatech.com; http://www.optimatech.com/optima/. □

Quantum preps Fireball, Viking lines

By David Morgenstern

Quantum Corp. this week will step up to bat with new high-performance and entry-level OEM hard drive lines.

The drives from the Milpitas, Calif.-based company will use magneto-resistive heads and PRML (partial response maximum likelihood) read-channel technology, which bolster capacities and performance.

Aimed at server and high-performance applications, Viking drives will come in capacities of 2.1 and 4.3 Gbytes and cost $475 and $675, respectively. Quantum said the new drives will ship in the fourth quarter.

The 7,200-rpm drives will have a sustained data transfer rate of 6 Mbytes per second and an average access time of 8.5 milliseconds. The drives will be offered with both narrow and wide Ultra SCSI interfaces.

Slated for release in June, new Fireball TM drives will come in capacities of 1, 2.1 and 3.2 Gbytes. Quantum said the 1-Gbyte model will offer an average access time of 12 milliseconds; the larger versions will sport 10.5-millisecond average access times.

Each will be offered with a Fast ATA or an Ultra SCSI interface. The 1-, 2- and 3-Gbyte Ultra versions will cost $266, $450 and $565, respectively.

The company also premiered Bigfoot, a line of 5.25-inch drives for entry-level Intel-standard PCs. □

Exponential eyes PPC

By Joanna Pearlstein

IBM Corp. this month granted start-up Exponential Technology Inc. a license to develop PowerPC-compatible chips.

Funded partly by Apple, Exponential will build PowerPC-compatible microprocessors based on a manufacturing technology called BiCMOS (see 12.11.95, Page 1). Exponential said in January it completed product tape out, an early stage of microprocessor development.

According to the company, its chips will be up to three times the speed of current Pentium processors from Intel Corp.; the chips are due in early 1997.

Exponential also said it recently signed a cross-licensing agreement with Motorola Inc. for a semiconductor-process patent. The company said it has a portfolio of seven patents for its design process.

Exponential Technology Inc. of San Jose, Calif., is at (408) 441-6050; fax (408) 441-6051; http://www.exp.com. □

Bugs take toll in Intuit's tax programs

By Jon Swartz

As if on schedule, users are finding loopholes in the current versions of Intuit Inc.'s tax-preparation software. However, the company this month fixed the programs and gave users a break with a new entry-level version.

Skewered by complaints about defects in its tax-preparation software a year ago, Intuit has already tallied seven flaws in this year's versions. The company said bugs in TurboTax and MacInTax can generate incorrect answers for car and real estate depreciation, self-employment deductions, and contributions to individual retirement accounts.

According to Intuit, the flaws affect less than 1 percent of its users. Users can request a fixed version or follow manual recalculation directions on the company's Web site and other on-line services.

Meanwhile, Intuit released QuickTax 1040A/EZ, a $9.95 tax program for Windows platforms. A Mac version will not be ready until the 1996 tax season.

Intuit Inc. of Menlo Park, Calif., is at (520) 295-3100 or (800) 964-1040; fax (520) 295-3406; http://www.intuit.com. □

For the record

The 02.19.96 Storage Beat (Page 6) incorrectly stated the capacity of Direct Connections' Spectra 4000/20 DAT jukebox. It holds up to 200 Gbytes.

INTEGRATE MACINTOSHES – with – Sun/SGI/HP

K-AShare – allows Macintosh computers to use a UNIX host as an AppleShare file server.

K-FS – enables UNIX users to access AppleShare volumes on a Macintosh.

K-Spool – allows Macintosh and UNIX users to share PostScript printers anywhere on the network.

FullPress – offers integrated prepress file-sharing and print-spooling, *including OPI!*

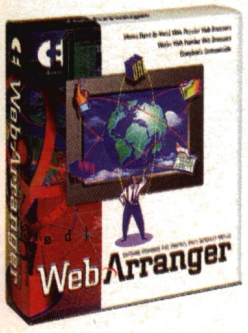
Point and click UNIX GUI...
No additional Macintosh software required!

Xinet
2560 Ninth Street
Suite #312
Berkeley, CA 94710
tel: 510.845.0555
fax: 510.644.2680
email: xinet@xinet.com

Server to the Macs...

Your WEB — Your WAY

Accelerated for Power Macintosh



There's a world of information at your fingertips, and until now, no easy way to control it. Your Internet world — that personal collection of sites that defines who you are and what matters to you. With WebArranger™, you can capture, organize and control your Internet world.

WebArranger works hand in hand with your Web browser and other Internet applications. Its agent technology checks important web sites or pages and notifies you of changes. It automatically downloads pages or entire sections of the Web for later viewing off-line. It grabs just about any kind of data on the fly: graphics, text, URLs, E-mail addresses, etc. Want it? Grab it! Then annotate it, link it, and organize it.

Mac OS

Do you have more bookmarks than you know what to do with? Import them. WebArranger then allows you to title, store, arrange, and even launch your URLs from easy-to-understand hierarchical file folders. And that's just the beginning. With WebArranger's customizable, object-oriented, "capture-and-organize-anything-anywhere" functionality, you'll wonder how you ever surfed without it.

WebArranger

CAPTURE, ORGANIZE AND CONTROL YOUR INTERNET WORLD

Control your Internet world for the limited introductory price of $79. Call 800 523-7638 (program CE2040) today, or visit CE Software at http://www.cesoft.com.

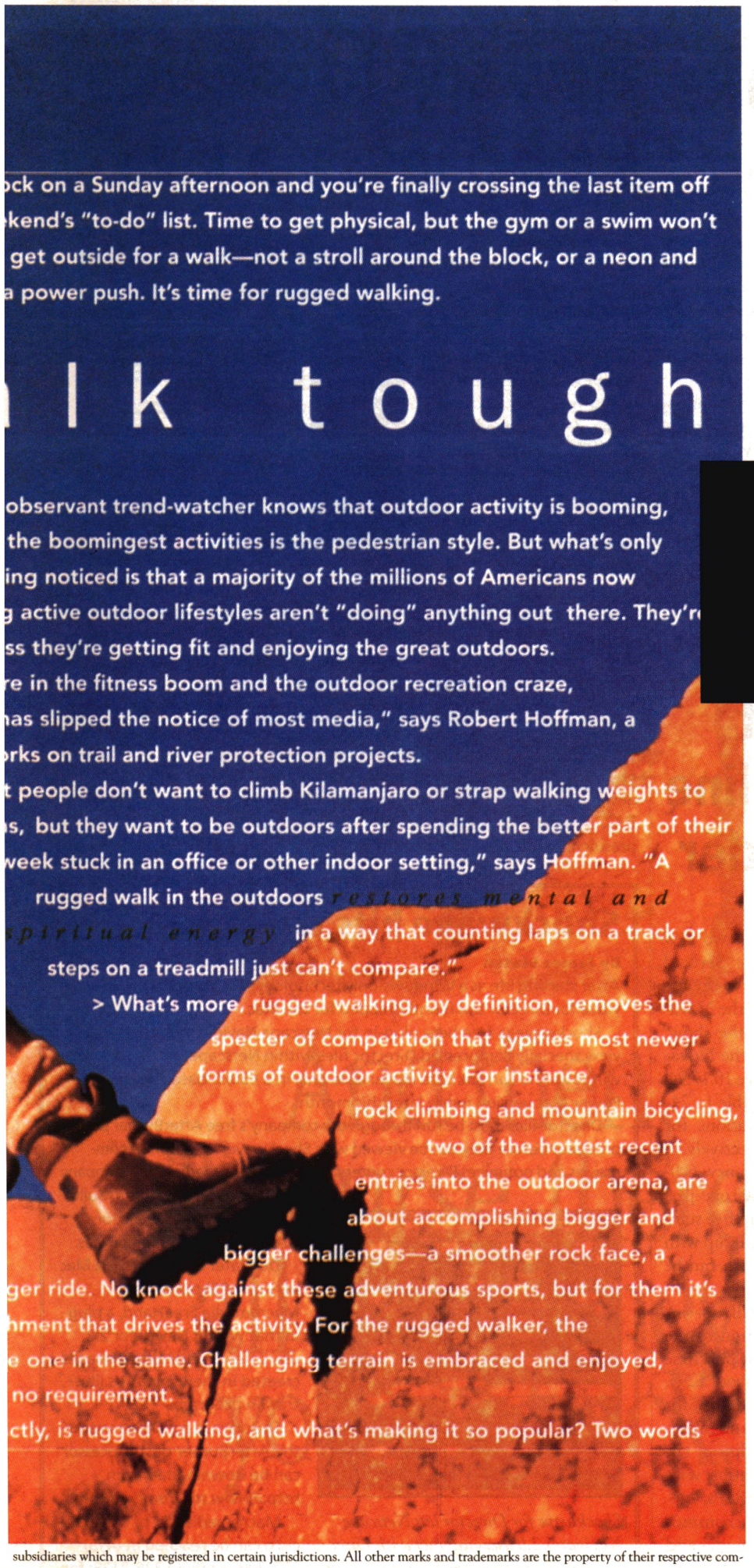
Offer Expires 3/31/96 © 1996 CE Software, Inc. CE Software, the CE Software logo, and WebArranger are trademarks of CE Software, Inc. All other brand or product names are trademarks or registered trademarks of their respective holders.

CE SOFTWARE

MIKE SALISBURY

Image created by Salisbury Communications for California Active magazine. Adobe, Adobe PageMaker, Adobe Acrobat and the tagline, "If you can dream it, you can do it" are trademarks or registered trademarks of Adobe Systems Incorporated or its panies. *Offer good for a limited time only and subject to withdrawal without notice. Offer valid in U.S. and Canada only. ©1995 Adobe Systems Incorporated. All rights reserved.

on PageMaker 6.0.

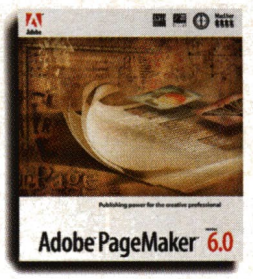

ock on a Sunday afternoon and you're finally crossing the last item off
kend's "to-do" list. Time to get physical, but the gym or a swim won't
get outside for a walk—not a stroll around the block, or a neon and
a power push. It's time for rugged walking.
lk tough
observant trend-watcher knows that outdoor activity is booming,
the boomingest activities is the pedestrian style. But what's only
ing noticed is that a majority of the millions of Americans now
g active outdoor lifestyles aren't "doing" anything out there. They'r
ss they're getting fit and enjoying the great outdoors.
re in the fitness boom and the outdoor recreation craze,
as slipped the notice of most media," says Robert Hoffman, a
rks on trail and river protection projects.
t people don't want to climb Kilamanjaro or strap walking weights to
s, but they want to be outdoors after spending the better part of their
week stuck in an office or other indoor setting," says Hoffman. "A
rugged walk in the outdoors restores mental and
spiritual energy in a way that counting laps on a track or
steps on a treadmill just can't compare."
> What's more, rugged walking, by definition, removes the
specter of competition that typifies most newer
forms of outdoor activity. For instance,
rock climbing and mountain bicycling,
two of the hottest recent
entries into the outdoor arena, are
about accomplishing bigger and
bigger challenges—a smoother rock face, a
ger ride. No knock against these adventurous sports, but for them it's
hment that drives the activity. For the rugged walker, the
e one in the same. Challenging terrain is embraced and enjoyed,
no requirement.
ctly, is rugged walking, and what's making it so popular? Two words

Mike Salisbury uses Adobe™ PageMaker™ to create designs so powerful they've become part of our collective consciousness. Layouts for Rolling Stone magazine, posters for Jurassic Park and Aliens, and Michael Jackson album covers bear his imprint. Now there's a radically new Adobe PageMaker 6.0 upgrade. "The interface is so natural, it never interferes with my ideas", says Salisbury, "and this new version is really over the top. I'm getting dead-on color from start to finish because it's locked into Kodak's Precision Color Management System." Hot new

Upgrade today!

PageMaker users $149*
QuarkXPress® users $199*

features include multiple master pages to streamline the creation of different page designs in a single publication; grouping and ungrouping to combine elements into a single movable, editable unit; integrated automatic trapping for color publications; and full compatibility with Adobe Acrobat™ and HTML so any document can be sent anywhere electronically. Adobe PageMaker 6.0 is here, so even if you're not creating professional design, this is the tool to give you professional looking results. Call 1-800-521-1976, Ext. J3372 for more information or visit our web site at http://www.adobe.com/.



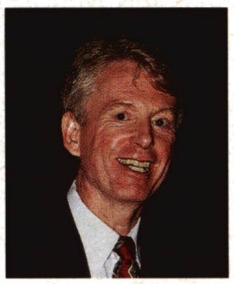
If you can *dream* it, you can *do* it.™

Adobe

subsidiaries which may be registered in certain jurisdictions. All other marks and trademarks are the property of their respective com-

Seybold sizes up Apple

In time for the pre-press and publishing show that bears his name, Jonathan Seybold discussed the outlook for Apple with Senior Associate Editor/GA Matthew Rothenberg.



MacWEEK: *What do you see as the Mac's future role in publishing?*

Seybold: Let's be real blunt about this: It is the Macintosh and the Macintosh alone that keeps everything from collapsing to a single standard. It's the Macintosh, the presence of the Macintosh in the marketplace that gives us a heterogeneous, multiplatform desktop marketplace. If the Macintosh disappears, the desktop marketplace collapses into [Intel-standard] PCs, and I would contend that if that happens, then the server marketplace collapses right behind it.

And that's why I think someone like Sun [Microsystems Inc.] has a strategic interest in Apple's survival.

As a competing server strategy for Windows NT, you mean?

Yes. Because if you are supporting Macs and a Windows machine, either in your own internal network or over the Internet, using a Unix server is quite plausible.

If, however, you're supporting only Windows PCs on the client end, there's a strong argument for saying, "Hell, it's so much easier to be compatible with that on the server end. I don't have to worry about all these multi-operating-system problems. I can have one set of people that are both clients and servers, and we don't have to learn this stuff."

Right now, at big [pre-press] shops, you've got people who are Unix people and you've got people who are Mac people. They aren't the same people. That's only tenable as long as there are multiple desktop standards. If the desktop standard collapsed to one, then that just sucks the whole industry right down.

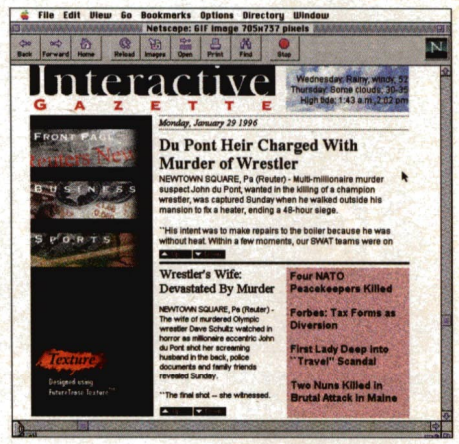
See Seybold, Page 12

New app to enhance Web pages via Java

By James Staten

Graphic designers who are thwarted by HTML may soon gain more freedom thanks to a Java-based authoring system from FutureTense Inc.

FutureTense Texture, being demonstrated this week at Seybold Seminars Boston 96, is a $495 cross-platform application that will output pages to be viewed via Java-enabled Web browsers.


File Edit View Go Bookmarks Options Directory Window
Netscape: GIF image 705x757 pixels
Interactive
GAZETTE
Monday, January 29 1996
Du Pont Heir Charged With Murder of Wrestler
NEWTOWN SQUARE, Pa (Reuter) - Multi-millionaire murder suspect John du Pont, wanted in the killing of a champion wrestler, was captured Sunday when he walked outside his mansion to fix a heater, ending a 48-hour siege.
"His intent was to make repairs to the boiler because he was without heat. Within a few moments, our SWAT teams were on
Wrestler's Wife: Devastated By Murder
NEWTOWN SQUARE, Pa (Reuter) - The wife of murdered Olympic wrestler Dave Schultz watched in horror as millionaire eccentric John du Pont shot her screaming husband in the back, police documents and family friends revealed Sunday.
"The final shot -- she witnessed.
Four NATO Peacekeepers Killed
Forbes: Tax Forms as Diversion
First Lady Deep into "Travel" Scandal
Two Nuns Killed in Brutal Attack in Maine
Texture

FutureTense Texture promises to free Web page designers from the shackles of HTML. It will let users place interactive images and text anywhere on a page without image maps.

The product will initially be released on Windows 95 and Windows NT; the Mac version's ship date has not been set, FutureTense said.

"The gating factor is the stability of Sun [Microsystems Inc.]'s Java development kit for the Mac," said B.C. Krishna, FutureTense vice president of technology.

Texture will give designers greater control over layout and typography. They will be free to position and layer text and graphics anywhere on a page and assign each an interactive quality. De-

See FutureTense, Page 12

Peak users can hear their changes as they work without waiting for files to be rewritten to disk. The two-channel program also supports MIDI sampler instruments.

BIAS Peak program puts slant on audio editing, processing

By Kelly Ryer

Start-up BIAS (Berkeley Integrated Audio Software) is seeking a place at the top of the audio heap with Peak, an audio-editing and processing application due to ship this week.

According to BIAS, the $299 program runs native on Power Macs or 680x0-based models; it does not require a sound card or specialized audiovisual hardware.

Peak offers nondestructive editing; background redraws of waveforms; and unlimited levels of Undo, Redo and Zoom. A feature called Loop Surfer lets users adjust start and end points for a loop during playback and then capture the loops as either a region or a new file.

"You can edit your samples, effects or waveforms while you're listening to see if it works or not," said beta tester Ira Chord Rubnitz, a recording engineer and composer at Rhythm and Hues of Marina Del Rey, Calif. "It's a really effortless, modern way of working."

The new application is compatible with Adobe Premiere audio plug-ins such as InVision Interactive Inc.'s CyberSound FX and KS Waves Ltd.'s L1 and Q10.

Peak supports both 16- and eight-bit audio in several file formats, including AIFF (Audio Interchange File Format), SDII, QuickTime and Red Book. The

See BIAS, Page 12

NovaJet plotter line gets wider

By Kristin Balleisen

EnCAD Inc. will show two new large-format plotters at Seybold Seminars Boston 96 this week.

EnCAD will deliver the NovaJet 4 inkjet plotter at the show. The newest plotter in the NovaJet wide-format line (see 10.17.94, Page 20) will be available in 24- and 36-inch configurations for $6,295 and $6,995, respectively.

The NovaJet 4 adds a new 600-by-600 dpi, unidirectional one-pass monochrome mode to its five standard print modes. It will ship with 4 Mbytes of RAM, which can be expanded to 68 Mbytes.

The new plotter will not include a direct connection to the Power Mac; users must purchase a Mac print utility for about $295. It will include software drivers for DOS, Windows 3.1 and Windows 95 users. In addition, the NovaJet 4 will be compatible with a variety of third-party RIPs.

The NovaJet 4 will accommodate up to 150 feet of media and accept 12 types of EnCAD media, including photo-glossy and semi-

See EnCAD, Page 12

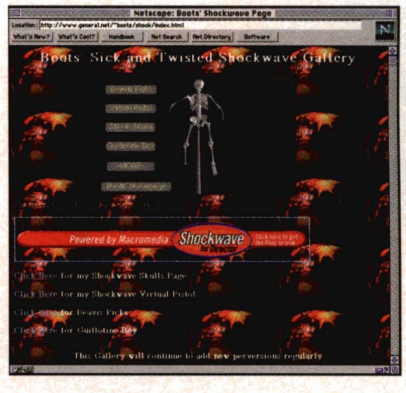
Shockwave hits the Mac

By James Staten

After starting life as a Windows-only technology, Macromedia Inc.'s Shockwave for Director this month shipped for the Mac.

Shockwave, a free beta plug-in for Netscape Navigator 2.0, lets users view specially compressed Director files within Netscape's main browser window. The current beta is available only in a 680x0-based version; a Power Mac version is due later this month.

Director files must be run through the company's free AfterBurner post-processor before they can be viewed with Shockwave. AfterBurner compresses and optimizes Director content for quick downloading, the company said. It also said it plans to build support into Shockwave for streaming and caching movies.


Netscape: Boots' Shockwave Page
Boots' Sick and Twisted Shockwave Gallery
Powered by Macromedia
Shockwave
This Gallery will continue to add new perversions regularly

Shockwave for Director lets Netscape Navigator 2.0 users interact with Director files, such as this one featuring an animated skeleton, over the Internet.

Due later this month is a Mac version of Shockwave for Macromedia FreeHand, a plug-in that will let Navigator 2.0 users view vector-based images created in the company's illustration program.

Shockwave for Director and the AfterBurner post-processor can be downloaded from http://www.macromedia.com.

Macromedia Inc. of San Francisco can be reached at (415) 252-2000 or (800) 326-2128; fax (415) 626-0554.

Some sound reasons to buy a Mac.

home video-game systems as well as many arcade machines.
Top PCs in Customer Loyalty[1]
#1 Apple
#2 Gateway 2000
#3 Compaq
#4 Dell
#5 Hewlett-Packard
and shadows. Where the action in a two-dimensional game is confined to a predefined space or track, true 3D software creates environments that can be explored in any direction.
Most Reliable PCs[2]
#1 Apple
#2 Compaq
#3 Hewlett-Packard
#4 Digital
#5 Micron
Trouble is, those games may be incompatible with other vendors' accelerators. Chip or board
Macintosh Performas enabled Apple to boost sales in the period 25% and regain its year-earlier ranking.
Top Computers in Education[3]
#1 Apple
#2 IBM
#3 Compaq
#4 Dell
A new breed of microchips and
ible with other vendors' accelerators. Chip or board makers could wind up with a temporary "design lock" on some of the most attractive games.
Computers Requiring the Least Customer Support[4]
#1 Apple
#2 IBM
#3 Micron
#4 Tandy
#5 Packard Bell
Personal-computer shipments in the U.S. rebounded strongly in the third quarter.

And then, of course, there's all the money you get back.

The Apple Power Payback Promotion.

$150 rebate.

- *When you buy any Performa® computer and qualifying printer now through March 17.*

$150 rebate.

- *When you buy any PowerBook® and qualifying printer now through March 17.*

Up to $500 rebate.

- *When you buy a Power Mac™ 7200 and any qualifying printer and/or monitor now through March 17.*

For a participating authorized Apple reseller, call 800-538-9696.
Or for more information, look for us on the World Wide Web at
http://www.apple.com/promo/powerpayback

Apple®

[1]*Consumer Technology Index study published 7/95 by Computer Intelligence InfoCorp.* [2]*Based on a reader survey published 12/95 by* PC World. [3]*Figures represent planned K-12 purchases for U.S. public schools as published in Quality Education Data's 1995-96 Technology Purchasing Forecast.* [4]*Based on a reader survey published 11/95 by* Home PC.

© 1996 Apple Computer, Inc. All rights reserved. Apple, the Apple logo, Macintosh, Performa and PowerBook are registered trademarks of Apple Computer, Inc. Mac and Power Mac are trademarks of Apple Computer, Inc. All Macintosh® computers are designed to be accessible to individuals with disability. To learn more (U.S. only), call 800-600-7808 or TTY 800-755-0601.

Mirus updates film recorder

By Kristin Balleisen

Mirus Industries Corp. last week delivered an upgrade to its desktop color film recorder.

The turbo IIE is available now for $5,995. It replaces the $6,995 turbo II as the entry-level model in Mirus' product line.

Like the earlier version, the SCSI turbo IIE outputs film at resolutions of up to 4,000 lines and offers a color depth of 36 bits of RGB data per pixel. It measures 19 by 8.5 by 5 inches and features Mirus' 2.5-inch internal electrostatic CRT with custom optics.

The new model features proprietary DoubleHit technology used in Mirus' high-end FilmPrinter Galleria recorder, priced at $9,995. According to the company, DoubleHit technology rescans individual pixels to derive a higher level of detail from each.

While imaging time for a typical slide is two to three minutes, Mirus said, DoubleHit scanning increases the imaging time to about five minutes.

According to Mirus, the new model also includes Eastman Kodak Co.'s RGB wratten-gel filters; these membranes offer higher color accuracy than glass filters. It also supports Eastman Kodak Co.'s new Electronic Output Film, which is designed specifically for laboratory and desktop imaging applications, the company said.

Mirus Industries Corp. of Santa Clara, Calif., can be reached at (408) 980-6600 or (800) 942-9770; fax (408) 980-6601; info@mirus.com; http://www.mirus.com. □

FutureTense

From Page 10

signers will be able to flow a story into multiple linked text boxes, creating multicolumn layouts as well as designs that jump back and forth among scattered images.

FutureTense Texture will also let designers create pages with content that changes over time, such as updates to news stories or market reports.

Font support will be enhanced through Bitstream Inc.'s TrueDoc Imaging Technology. Unlike HTML, Texture will let users draw on multiple fonts that will be downloaded automatically to the client for viewing. The program will also perform drag-and-drop image conversion to GIF or JPEG.

FutureTense Inc. of Acton, Mass., can be reached at (508) 263-5480; fax (508) 263-1769; info@futuretense.com; http://www.futuretense.com. □

Seybold

From Page 10

That's why Apple can't afford to retreat into a niche marketplace and just say, "We'll make high-end machines for graphic artists" because the same argument applies there. If the people who are going to create and interact with the content are using PCs, why not use a PC to create this stuff?

I think it's absolutely essential that there be a very strong sales base among consumers; if Apple ever walked away from that, I think the company is dead.

A successful, competitive computer hardware business is essential for Apple and for the success of the [platform]. Apple does not have to be in the hardware manufacturing business to accomplish that five years from now, but it sure as hell has to now.

What do you think about Apple's server strategy?

OK, let's talk about the most glaringly egregious, incredibly dumb thing that we've seen happen over the past year. The big story in computing is the Internet. The Internet was a gift to Apple because the Internet is open and heterogeneous. The Internet stresses content, in text originally but graphics and other kinds of things. It plays to all of Apple's strengths.

So what the hell does Apple do? Apple took a typically proprietary strategy. They tried to push OpenDoc, tried to stress Apple servers, Apple technology. Why wasn't Apple right there with Sun and Netscape [Communications Corp.] and [Silicon Graphics Inc.] saying, "We need to work together, folks"? We need to come up with alternative open standards before Microsoft [Corp.] rolls over all of us. All of us need to work together to do that. Sun was doing that. Netscape was doing it. SGI was doing it. Apple was absent.

> "It is the Macintosh and the Macintosh alone that keeps everything from collapsing to a single standard."

Do you think Apple still has a chance to catch up?

That to me would be an absolute crisis priority. But that means reversing a lot of Apple thinking. That means Apple people have to accept Java, in more than just a halfhearted fashion. It's ridiculous that Intel [Corp.] has been providing people to port Java over to the Intel platform. Apple's not been doing that.

Do you think we're going to see some renewed commitment to that strategy at Seybold Seminars Boston 96?

I don't know how fast [Apple CEO Gilbert] Amelio can turn the company around. Part of Apple's problem has been that it's been really hard for anybody to move the company. The politics, the inertia, the entrenched interests and so forth mean that people have a habit of ignoring someone trying to pull the company in a coherent direction.

But I certainly hope that what has happened will scare not only the board, but scare the Apple employees right down to the shipping clerk and make people realize this is survival. This is the last shot. If you don't execute now, you're dead.

And I would hope that people would for once in their corporate lives actually pull together and pull in the same direction. □

BIAS

From Page 10

company said it plans to support the .WAV format in an upcoming version.

Several accessory packs will be available with the release of Peak. The Composer/Audio Designer Pak adds effects and audio-processing options that include Pitch Change and Rappify; an Audio Pro Pak adds advanced editing tools for gain changing, normalizing, "declicking" and more; and a Sampler Pak directly supports a variety of MIDI samplers.

Rubnitz identified the Rappify feature as a fresh new digital signal processing effect. "If you have a sample of the words 'for instance,' you can assign it to a keyboard key," Rubnitz said. "If you tap the key lightly, you'll just hear the 'f,' but if you hold it down a bit longer, you'll hear more of the 'for.' You can get fun effects like 'f-f-f-for instance.' "

Another accessory, BIAS' Audio Librarian Pak, lets Peak users store audio files in conventional database applications such as Claris FileMaker Pro. It also performs batch-file processing for functions such as mono-to-stereo or sample-rate conversion.

Each accessory pack will cost $129.

BIAS of Sausalito, Calif., can be reached at (415) 331-2446 or (800) 775-2427; fax (415) 331-2446. □

EnCAD

From Page 10

glossy paper, as well as vinyl and canvas.

The NovaJet Pro 50, set to ship in March for $16,995, is the first plotter to accommodate 50-inch-wide media, EnCAD said.

The 300-dpi NovaJet Pro 50 will feature a printing area up to 49.5 inches wide, the largest in the industry, according to the company. It will ship with a new automated power feed and takeup mechanism that accommodates up to 400 feet of media and can print unattended for up to eight hours, EnCAD said.

The plotter will include the same Motorola CISC processor used in the company's NovaJet Pro printer (see 10.09.95, Page 12) and 4 Mbytes of RAM, expandable to 68 Mbytes. The product will feature the company's continuous ink-delivery system and four 500-milliliter ink reservoirs.

The plotter will ship with a serial printing utility for the Mac. In addition, EnCAD will sell the NovaJet Pro 50 with a RIP server manufactured by Onyx Computing Inc. for $22,995. The 32-bit, PostScript Level 2-compatible RIP will include a Pentium processor and run OS/2. It will ship with 32 Mbytes of RAM and a 1-Gbyte hard disk; it will connect to the Mac over an Ethernet network.

EnCAD Inc. of San Diego can be reached at (619) 452-0882 or (800) 453-6223; fax (619) 452-0891. □

winning shortcuts
We're not reinventing the wheel; we're expanding your capabilities with innovative software tools for Photoshop™, Quark™, Live Picture™ and Scitex™ users.
FASTedit™/Deluxe
Edit several file formats and save loads of RAM!
Publish AWARD
Epilogue™
Translate and rasterize any EPS or PostScript file.
MacUser RATED 5 5 5 5 SEPTEMBER 1995
Adobe PostScript
Smart XT™
The Smart XTension for high resolution DCS output
ColorMatrix™
Color correction utility, now PowerShop accelerated
Schawk Roundup™
Round up entire file elements for output
Receive detailed information from our web page @ www.totalint.com or call us direct.

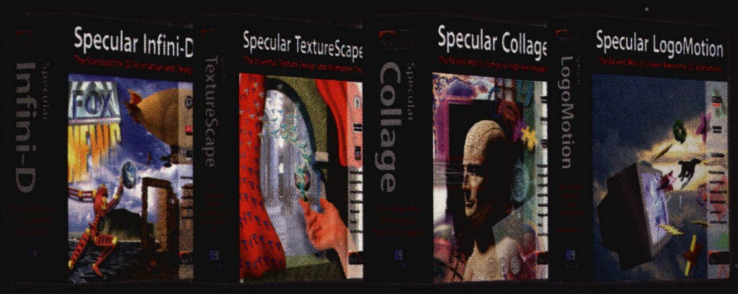
TOTAL INTEGRATION™
TOTAL INTEGRATION, INC.™
334 E. Colfax St. ▪ Suite A
Palatine, Illinois 60067 USA
PHONE 847.776.2377 ▪ FAX 847.776.2378

You will be amazed...

Specular

It's incredible what we can fit into a box.

Specular products just might be the best-loved graphics software on the Macintosh. And why not? From 3D animation to texture design to image composition, we've gained the respect of graphics professionals and enthusiasts the world over. And the press agrees, proven by the number of prestigious awards given to us. It's accolades like these that make Specular a trusted and best-selling name.



A diverse group of users in film, television, multimedia and print rely on Specular software everyday. And while the quality, price and performance of our products speak for themselves, we understand the software market is a loud and confusing place. So we offer the Specular Guarantee, a 30-day money-back guarantee that lets customers buy with confidence. So check us out. You might fall in love....

NewMedia Magazine Awesome · NewMedia Magazine Awesome · 1994 World Class Winner Macworld · Macworld World Class Award Winner

1•800•433•7732

http://www.SPECULAR.com

MacUser Editors' Choice Award 1994 Winner · MacUser Editors' Choice Award 1992 Winner · MacUser Editors' Choice Award 1995 Winner

Specular Products are proudly distributed by Ingram Micro.

in

here

mistakes

a r e

forgiven

©1995 Microsoft Corporation. All rights reserved. For info. only: in the 50 United States and Canada (800)531-6748. Outside the U.S. and Canada, call your local Microsoft subsidiary or (206) 936-8661.
For Microsoft text telephone (TT/TDD) services call (800) 892-5234 in the U.S. or (905) 568-9641 in Canada. Microsoft is a registered trademark and *Where Do You Want To Go Today?* is a trademark of Microsoft Corp. Power Mac is a trademark of Apple Computer, Inc.

YOU HAVE A JOB TO DO

You are on
Your Power Mac.™
You are in
Microsoft® Word 6.0.1.
Your mind
Is racing.
Your fingers
Are racing
To keep up
With your thoughts.

YOU

You begin
A new
Sentence with
A lowercase letter.

WRITE

This mistake
Is corrected
Automatically.

YOU

Knowing there are
100 levels
Of Undo.

REVISE

And 100 levels
Of Redo.
Just in case.

YOU

You begin a new
Sentence with
An abbreviation

WRITE

You created.
It becomes
An entire phrase.
Automatically.

YOU

In
Print preview

REVISE

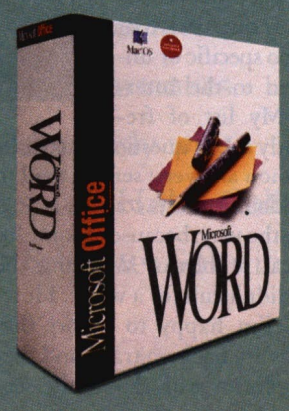
You change
Margins
Words
Typefaces.

YOU

Until you have finished.
You click AutoFormat.
And the block of words
Can become

WRITE

A letter.
A proposal.
A story.
Automatically.
You write. Because you can.



Microsoft®

WHERE DO YOU WANT TO GO TODAY?™

ARA 3.0: PPP promised, but no delivery in sight

New version due late '96, early '97

By Joanna Pearlstein

First discussed in 1993, the delivery of the long-awaited Apple Remote Access 3.0 is still far in the distance, according to sources.

Slated to ship in late 1996 or early 1997, Apple Remote Access, or ARA, 3.0 will reportedly integrate Point-to-Point Protocol (PPP); this will provide Mac users with a feature already available to Windows 95 and Unix users.

Sources said Version 3.0 will rely on PPP instead of Apple Remote Access Protocol, Apple's proprietary protocol for ARA; it will transfer data over both AppleTalk and Internet Protocol.

Version 3.0 will also be the first version of ARA to support Open Transport. Currently, ARA has problems working with Open Transport, preventing some PCI-based Macs from using the remote-access technology. Open Transport is crucial for Apple's forthcoming PCI PowerBooks (see 02.12.96, Page 1).

Apple has publicly acknowledged that AppleTalk and TCP/IP connectivity will be integrated into ARA via Open Transport-PPP links. The company has said it will merge ARA and personal server capabilities with basic Open Transport functions.

See ARA, Page 18

Where's Apple Remote Access?

DATE	EVENT
Fall 1991	ARA 1.0 ships with PowerBook line
Fall 1993	ARA 2.0 ships; Windows client promised for 1994
Spring 1994	ARA 2.0.1 ships
1995	Work on Windows ARA client discontinued
Spring 1996	ARA 2.1 to ship; will add ISDN support
Late 1996	ARA 3.0 expected, but no firm ship date

Cabletron to ship flood of switches

FastNet family to grow in spring

By Clifford Colby

Amid all the pronouncements this month made by presidential hopefuls in its home state, Cabletron Systems Inc. has managed to squeeze in a little news of its own. The company announced plans to ship this spring its FastNet family of 100BASE T products.

The FastNet 100 switch will be available with eight or 16 ports; each port will autoconfigure for either a 10- or 100-Mbps Ethernet connection. The device, which will include built-in SNMP (Simple Network Management Protocol) support, will start at $16,800. Cabletron's FastNet 10 switch will come with 12 or 24 10BASE T ports, and users can add two optional 100BASE T ports. FastNet 10 pricing will start at $8,660.

Cabletron said the FastNet Family will also have two Fast Ethernet hubs, one intelligent and one not. Users will be able to stack the 24-port hubs five-high; prices will be $6,995 and up.

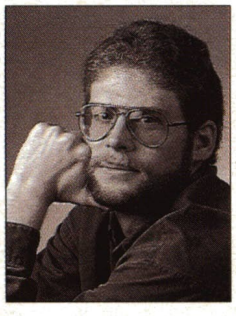
The company also announced it will add two new devices to its SmartSwitch family this spring. The first will be the Workgroup SmartSwitch, a $3,595 stand-alone switching chassis that can take up to four SmartSwitch modules. The second will be the MMAC (Multi Media Access Center) SmartSwitch, a $2,595 three-slot switching chassis that will fit inside Cabletron's larger MMAC chassis.

Cabletron said it will ship a $12,395 24-port Ethernet module and a $6,395 two-port Fiber Distributed Data Interface module for its SmartSwitch chassis; both will also ship this spring.

Cabletron Systems Inc. of Rochester, N.H., is at (603) 332-9400; fax (603) 337-2211; sales@ctron.com; http://www.ctron.com. □

WORKING THE NET ADAM C. ENGST

Lowdown on PPP and domain names



Thanks, everyone, for the flood of questions you've sent in the past few months. Unfortunately, my editors don't give me the space needed to answer questions that are too specific or unrelated to the Internet. My list of frequently asked questions has some common answers; send e-mail to faq-adam@tidbits.com.

By the way, because of some logistical problems, Working the Net didn't run for a while. However, I'm happy to report that things are back on track and that the column will appear the second Monday of every month starting in March.

Many people have expressed confusion over the many versions of MacPPP. Here's the deal:

PPP hacks

MacPPP 2.0.1 is the latest official version. As 2.0.1 became increasingly long in the tooth, independent programmers released unofficial updates. These versions came with higher numbers that led users to think they were official updates. To add to the confusion, MacPPP 2.0.1 and Open Transport dislike each other intensely, so Open Transport users have had to use an unofficial version.

You're welcome to try any of the hacked versions, but I recommend only MacPPP 2.0.1 and FreePPP Version 1.0.5 or later. FreePPP

See Engst, Page 18

WebArranger 2.0: It's a PIM and Internet client

By James Staten

CE Software Inc.'s Internet utility, WebArranger, has gone from a freeware organizer to a full-blown commercial Internet client.

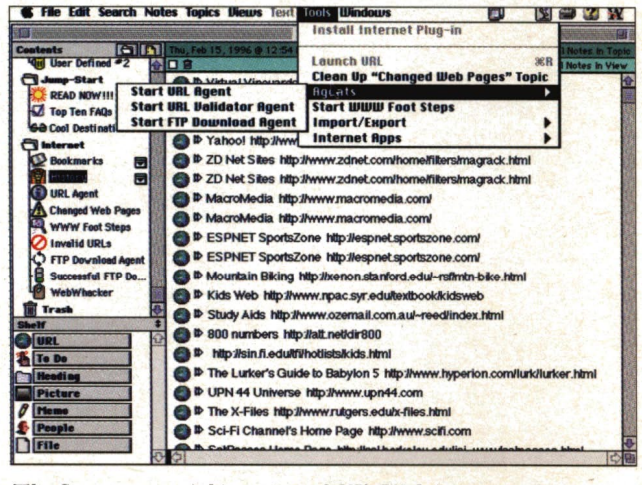
WebArranger 2.0 is now shipping for $129.95. It retains the personal information management capabilities of the initial version (see 12.11.95, Page 10) and adds a raft of new features that make it more than an Internet-savvy personal information manager.

For example, the upgrade has a URL (uniform resource locator) validator that checks the address of a Web site and automatically updates WebArranger's listing with any changes. To assist in FTP downloading, the application now has a built-in Archie client and download agent that retries busy FTP servers until a connection is established.

Version 2.0 has an e-mail address book that can directly copy an address into an e-mail client's To field; an enhanced Grabber tool can also copy text or graphics to WebArranger with a single keystroke. And The ForeFront Group Inc.'s WebWhacker, which allows users to copy a Web page to their local drive with all graphics, is now included.

WebArranger 1.0 users can get Version 2.0 for $49.95. Users of Common Knowledge Inc.'s Arrange can upgrade for $39.95 through CE.

CE Software Inc. of West Des Moines, Iowa, can be reached at (515) 221-1801 or (800) 523-7638; fax (515) 221-2694; http://www.cesoft.com.



The first commercial iteration of CE's WebArranger, the Internet-based organizer that started life as Common Knowledge's Arrange, adds FTP, Archie and e-mail functions to its bookmark and organizational repertoire.

There are two ways to upgrade to Fast Ethernet. Only BlueStreak is seamless.

BLUESTREAK™ 10/100 FAST ETHERNET CARDS, HUBS & BRIDGES

BlueStreak

The more stuff on a network, the more finicky it gets. So when you're upgrading to Fast Ethernet, if you don't go with a seamless solution, you might as well strap on the old tool belt right now.

That's why BlueStreak™ Fast Ethernet products are so great. Our 10/100 Cards and Bridges support both 10 and 100Mbps networks, so they make upgrading simple and clean, the way Dayna stuff should.

The BlueStreak Family includes a 10/100Mbps PCI Card that's compatible with the new PCI Macs, a PDS Card, and a 10/100Mbps NuBus Card. Both support NWay,™ automatically switching between 10 and 100Mbps.

Surf us at www.dayna.com

We also offer a 10/100 Bridge that makes connecting workgroups simple, a 100/100 Bridge to extend your network, and a 12-port Hub. And all BlueStreak products come with lifetime warranties.

Plumb your network seamlessly with BlueStreak Cards, Bridges and Hubs. Call today for a free copy of our Fast Ethernet Solution Guide, and get your data flowing like never before.

Dayna®

CALL 1.800.531.0600 TODAY FOR COMPLETE SPECS

©1996 Dayna Communications. BlueStreak is a trademark of Dayna. All other product names are the property of their respective holders.

Engst

From Page 16

combines many of the changes in hacked MacPPP and is the only one compatible with Open Transport. It's available at ftp://mirror.apple.com/mirrors/Info-Mac.Archive/comm/tcp/conn/.

Picking names

Eric Specht asks, "I know I can run FTP and Web servers on the same Mac, but how do I set it up to respond to both 'www.company.com' and 'ftp.company.com'?"

The Internet domain name system maps one or more subdomain names to a single Internet Protocol address. You must register your domain name (for $100) with the InterNIC. Once you do that, you can assign as many subdomains as you like. Assigning subdomains requires changes only to the domain name server that handles your domain. You should work with the organization that provides your Internet service.

Spreading the word

From Richard Machado: "How do you spread the word about your Web site?"

Having a Web site can be great but only if surfers know about it. I recommend two ways to get the word out.

First, make sure your site is listed in the big directories such as Yahoo, InfoSeek, Excite, WebCrawler, Lycos and Alta Vista. You can add it individually, or you can use something like Submit It!, which submits your page to a number of directories at once. Search for "Announcement Services" in Yahoo to find Submit It! and others.

Second, I strongly recommend that you and others in your organization put the URL (uniform resource locator) and a short description of your site in your e-mail signature. You'd be surprised how much traffic can be generated by word of mouth.

The old switcheroo

Charles Bouldin wants to know: "How can I easily switch MacTCP (on a PowerBook or portable hard drive) between settings for Ethernet at work and Point-to-Point Protocol dial-up at home?"

You need either John Norstad's MacTCP Switcher or David Walton's MacTCP Netswitch. They work in slightly different ways; unfortunately, both require a reboot to switch setups. Once Open Transport runs on all Macs, it should eliminate this problem for good. Both applications are free at ftp://mirror.apple.com/mirrors/Info-Mac.Archive/comm/tcp/conn/. □

Adam C. Engst is editor of TidBITS and author of "Internet Starter Kit for Macintosh." He can be reached at interq@macweek.com or http://king.tidbits.com/.

ARA

From Page 16

However, the ARA horizon isn't totally empty: Sources said Version 2.1 will ship this spring and will add ISDN (Integrated Services Digital Network) support. And the arrival of ARA 3.0 could coincide or may be integrated with Open Transport 1.2, which will offer multihoming support.

Remote-access vendors say PPP is important because it is an industry standard and it supports multiple protocols.

"It would be nice if Apple standardized on PPP," said Greg Goodman, vice president of Miramar Systems Inc. of Santa Barbara, Calif. "It would give one universal way of doing dial-up for either IP or AppleTalk."

Garth Conboy, manager of Apple technologies at NetManage of Cupertino, Calif., said, "PPP is going to win from a technology standpoint, so Apple has to move that way."

More than two years ago, Shiva Corp. wrote a PPP driver for Apple, but the product never shipped. Some sources also speculated that ARA 3.0 was sidetracked by the need to fix Open Transport and develop Copland. Developers have not yet been seeded with Version 3.0.

Apple first promised that a Windows ARA client would arrive in 1994, but sources said that project has been killed. Apple also never delivered a version of ARA that works over Cellular Digital Packet Data, which the company first discussed in 1992.

Apple declined to comment on ARA 3.0.

In other news, Apple released Version 2.1 of the ARA MultiPort Server. The $1,099 server consists of ARA software and a NuBus card that provides four serial ports; the new version includes bug fixes and a new 7-inch, four-port serial card. □

Past Present Future

eXodus™ for Macintosh

The Leader in X Connectivity

White Pine is dedicated to offering the best X Connectivity available. We continue to invest in offering seamless access to X applications from any desktop.

We incorporate the latest technology and advances, such as Open Transport releases, to make sure your entire company has access no matter the platform, operating system or network requirements.

So when you're looking for the most reliable X Connectivity available on the market today, go with the market leader—White Pine's eXodus™ for Macintosh.

Also available for Windows, Windows 95 and Windows NT

Corporate Headquarters
White Pine Software, Inc.
40 Simon Street
Nashua, NH 03060-3043
Phone: 603-886-9050
Fax: 603-886-9051
Internet: info@wpine.com

West Coast Office
White Pine Software, Inc.
1485 Saratoga Avenue
San Jose, CA 95129-4934
Phone: 408-446-1919
Fax: 408-446-0666
Internet: info@wpine.com

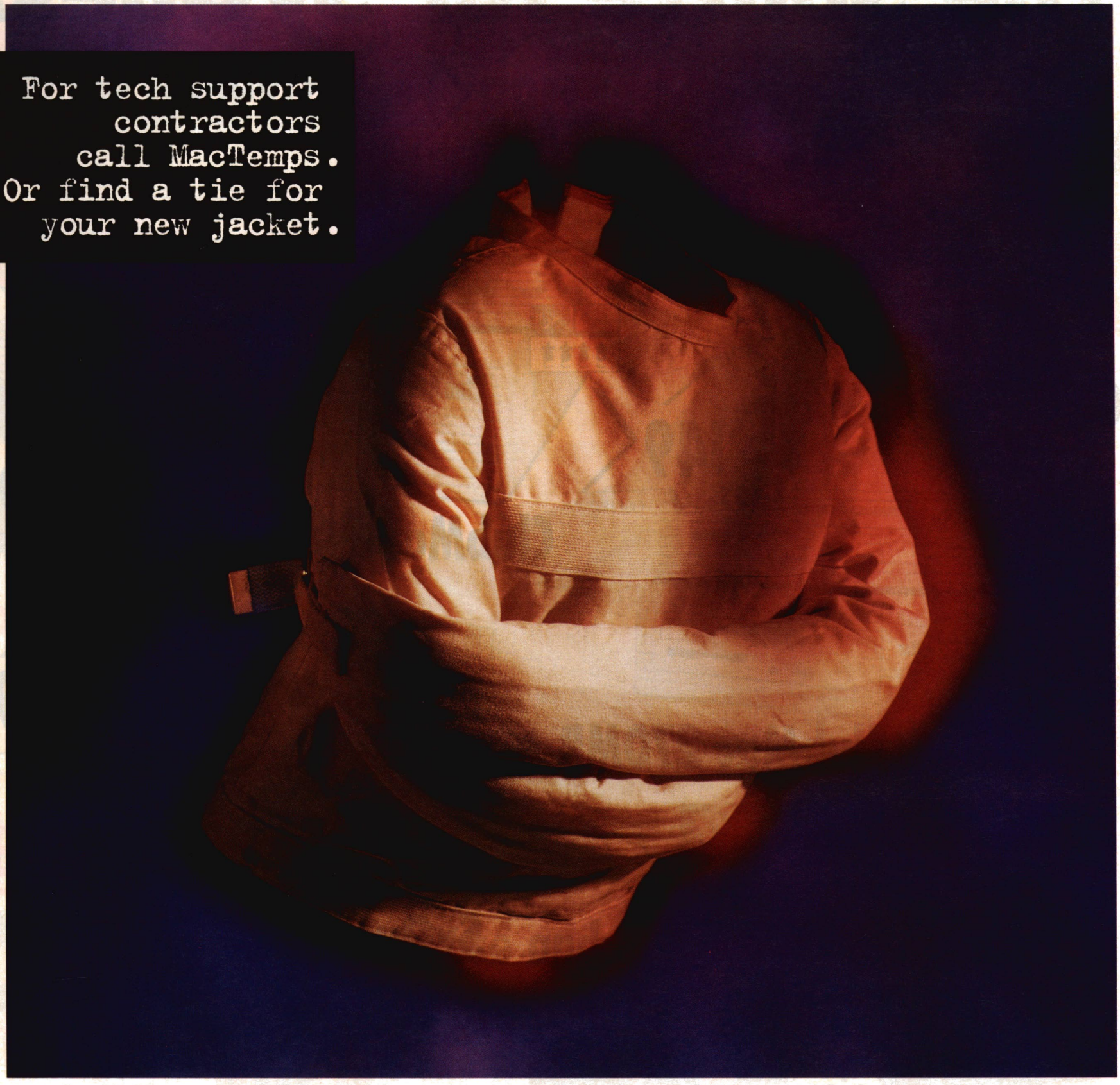
European Headquarters
About Software Corporation
a subsidiary of White Pine Software
9551, route de Saint Laurent du Var
06610 La Gaude/FRANCE
Phone: +33 93 24 76 00
Fax: +33 93 24 76 06
Internet: euro_info@wpine.com

Download it for FREE!

The X Connection® for every desktop

http://www.wpine.com

White Pine
Keeping You Connected



Instead of working until your friends in the white coats come to see you, call MacTemps for tech support contractors. They can help you with everything from DIMM and Ethernet card installation to software and system upgrades. They can even staff your help desks. And since MacTemps specializes in Macintosh personnel, we're the one agency that can send you Mac contractors who can hit the ground running. No training, no hassles, no headaches. Don't wait. Get in touch with us right now. And ask for a free list of tech support phone numbers. Or start thinking about what would match better: a flowered or paisley tie.

Call the MacTemps office nearest you at 1-800-MACTEMPS. E-mail us at info@mactemps.com, or visit our World Wide Web site at http://www.mactemps.com.

MacTemps
1-800-MACTEMPS®

Atlanta, Boston, Chicago, Cleveland, Dallas, Denver, Detroit, Houston, London, Los Angeles, Melbourne, Miami, Minneapolis, New Jersey, New York, Orange County, Paris, Philadelphia, Phoenix, Pittsburgh, St. Louis, San Diego, San Francisco, Santa Clara, Schaumburg, Seattle, Stamford.

1-800-CLUBMAC 1-800-258-2622

The Source for SyQuest!

NEW LOW PRICES ON DRIVES!

ClubMac 88MB

C104 1800

$199

MacUser RATED ★★★★

ClubMac 105MB

$149

C104 1803

ClubMac 200MB

$349

C104 1801

ClubMac 270MB

$349

C104 1802

SyQuest® EZ135 Drive

$219

S198 2001

Includes One Free Cartridge

Backed by ClubMac's 30 DAY Money Back Guarantee

Mac™OS COMPATIBLE

SyQuest 5 YEAR Warranty*

FEATURING SyQuest® REMOVABLE TECHNOLOGY

NEW LOW PRICES ON GENUINE SyQuest Cartridges

Source Code 6308A

ClubMac®

1-800-258-2622

7 Hammond, Irvine CA 92718

DISCOVER NOVUS VISA MasterCard AMERICAN EXPRESS Cards

NO SURCHARGE!

- ClubMac hard drives include all cables, cords, leds, and brackets necessary for use with the Macintosh you specify. ClubMac formats all hard drives and installs Apple System 7.1 software, Charismac Anubis Driver, and PowerMerge LE.
- External drives include a Double Shielded, twisted pair 25-50 SCSI cable.
- ClubMac honors all original equipment manufacturers warranties. ClubMac will repair or replace drives at it's discretion. Drives returned within first 30 days of purchase are replaced with a new unit.
- All ClubMac hard drives include a 30 day money back guarantee. Your risk is the cost of shipping.

WARRANTIES: All items manufactured by ClubMac are returned to ClubMac for warranty repair. All other items carry manufacturer's warranty. MONEY BACK GUARANTEE: All products manufactured by ClubMac carry a 30 day money back guarantee. ClubMac extends all other manufacturers' return policies to its customers. Non-ClubMac products carry 30 day money back guarantee when specified. RETURNS: Call for RMA number! Any product that is returned WITHOUT an RMA number will be refused. ALL PRODUCT INFORMATION AND PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE. NOT RESPONSIBLE FOR TYPOGRAPHICAL ERRORS.

Postscript® Laser Printer...

Only $399

NEC

Silentwriter 640

Adobe Postscript® Level 2 Printer!

6 Pages Per Minute!

While Supplies Last.

For these and other great deals, call for a FREE Subscription to the ClubMac Catalog!

Authorized Catalog Reseller

24 HOURS A DAY OPEN 7 DAYS A WEEK

Features!

- 300 x 300 dpi w/3 level Sharp Edge Technology
- 17 scalable Adobe Type 1 fonts
  35 scalable TrueType fonts - system resident
- 3 MB Memory with FMT
- AppleTalk Interface
- Energy Star Compliant
- **System 6.0.7 or later required**
- Two Year Overnight Replacement Warranty

POSTSCRIPT®

N027 1001	**NEC Silentwriter 640 Printer**	**$399**
N020 1075	**NEC Silentwriter Toner Cartridge**	**$99**

Source Code 6308A

ClubMac®

1-800-258-2622

General Sales	24 Hours a Day, 7 Days a Week	(800) 258-2622	
Inquiries/International Sales	M - F 5am - 9pm PST	(714) 768-8130	
Corporate/Education Sales	M - F 5am - 5pm PST	(800) 258-2621	
Customer Service	M - F 7am - 5pm PST	(800) 551-6398	
Technical Support	M - F 7am - 5pm PST	(800) 854-6227	
24-Hour Fax		(714) 768-9354	

1-800-258-2622 1-800-CLUBMAC

MacWEEK

Editor in Chief Mark Hall
Editor Rick LePage
Managing Editor Brenda Benner
Art Director Eleanor Leishman
Director/Editorial Programs Anita Malnig

NEWS
Executive Editor Andrew Gore
News Editor Carolyn Said
Business Editor Jon Swartz
Senior Associate Editor/GA Matthew Rothenberg
Associate Editor/News David Morgenstern
Senior Writers Joanna Pearlstein, Kelly Ryer
Staff Writers Kristin Balleisen, Clifford Colby

REVIEWS AND FEATURES
Executive Editor Stephen Howard
Senior Editor/Features Catherine LaCroix
Senior Editor/Reviews Missy Roback
Associate Editor/Reviews Jeff Green
Editor at Large Dale Coleman
Editor Emeritus Henry Norr
Contributing Editors Don Crabb, Ric Ford, Bruce Fraser, Connie Guglielmo, Steve Hannaford, Jonathan Oski

MACWEEK ONLINE
Associate News Editor/On-line James Staten
Senior Editor, ZD Net/Mac Mark Simmons
Associate Editor, ZD Net/Mac Sasha Pave

COPY DESK
Assistant Managing Editor Mariann Hansen
Copy Chief Marty Cortinas
Senior Copy Editor Patricia Orsini
Copy Editor Rebecca Gulick

ART AND DESIGN
Associate Art Director Margaret Lee
Graphic Designer John Farnsworth II
Graphics Associate Gevin Shaw

PRODUCTION
Production Manager Steve Spingola
Assistant Production Manager Joy E. Krinsky
Production Coordinator Jose Urrutia
Pre-press Manager Assistant Tim Manousos
Pre-press Manager Tamara Gargus
Pre-press Technician Michele Kellogg

Group Publisher John Blake

Group Business Director Bret A. Violette
Group Business Manager Mary E. Colbert
Group Marketing Director Laurel Clark Skillman
Group Research Director Neil Karlin
Marketing Manager Renee Bula
Sales Development Manager Cheri L. McKeithan
Marketing Coordinator Stephanie Arnold
Director, Controlled Circulation Justin Williams
Assistant Circulation Manager Lorraine O'Shea
Circulation Assistant Josephine Chang
Assistant to Group Publisher Beth Ina
Advertising Coordinators Elizabeth McGinnis, Jennifer Sawyer
Administrative Assistants Colleen Dasher, Heather McKee, Gina Michelucci, Deborah Monaghan

Editorial office: 301 Howard St., 15th Floor, San Francisco, Calif. 94105. Phone (415) 243-3500; fax (415) 243-3651; macweek@macweek.com

MacWEEK Online: http://www.zdnet.com/~macweek/ CompuServe: go zmc:macweek, eWorld: shortcut: macweek

Advertising office: 950 Tower Lane, Foster City, Calif. 94404. Phone (415) 378-5600; fax (415) 378-6903.

Subscriptions: Customer Service Department, MacWEEK, c/o JCI, P.O. Box 10634, Riverton, N.J. 08076-0634. Phone (609) 786-8230.

Permissions and Reprints: Requests for permission to quote from an article should be directed to Chantal Tucker, Ziff-Davis Publishing Co., 1 Park Ave., New York, N.Y. 10016; fax (212) 503-5420. For price quotes on reprints, contact Ziff-Davis Reprints at (800) 825-4237.

MacWEEK is an independent journal, not affiliated with Apple Computer Inc. Apple and Macintosh are trademarks of Apple Computer Inc. Entire contents copyright 1996 Ziff-Davis Publishing Co. All rights reserved. Material in this publication may not be reproduced in any form without permission. MacWEEK is a registered trademark of Ziff-Davis Publishing Co.

BPA INTERNATIONAL

Charge for OS updates?

In these times of razor-thin margins, quarterly losses and management turnover, Apple needs more ideas to generate revenue. One option the company should consider is charging for general system software updates.

We're not talking about bug fixes in System 7.5.3 — and anyone with a PowerBook 5300 should get the recent software update free; and users struggling with networking on a PCI-based Power Mac ought to get a medal, as well as Version 1.1 of Open Transport hand-delivered by an Apple-certified technician.

Updates that add functionality to the Mac OS, however minor, should not necessarily be given away.

The economic impact of a modest charge — say $20 to $35, depending upon the update's contents — is not going to make Apple flush with cash but, if done right, it could help overall sales and profits, and give Apple a method for generating revenue and changing its approach to delivering Copland. Under this scenario, Apple could follow the same model it used with System 7.5 and ship components of the OS in "productivity updates," as they become available.

Apple has charged for system software updates before, and while there were some complaints from small, highly vocal pockets of users, most businesses and professionals understand and will pay for the real costs of software development and support.

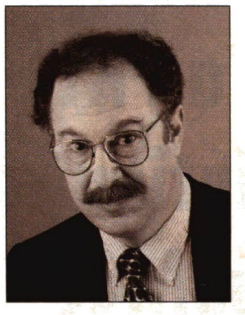
If Apple were to re-evaluate this model, it might also look to user groups and on-line services as a mechanism for distribution of the paid updates. By sharing some of the revenue with each group, Apple would get partners that could provide additional infrastructure and take some of the pressure off Apple's distribution costs and support operations.

Microsoft Corp. is in the OS business and is currently charging $45 per workstation for upgrading Windows NT 3.5 to 3.51. The revenue generated from this patch, which is mostly bug fixes, is not trivial, and we think Apple should at least consider similar options as it struggles to redefine itself. □

THE SECOND DECADE HENRY NORR

Execution of the strategy is as essential as the idea

"Having a great strategy is worthless if you can implement it." — Gilbert Amelio and William Simon, "Profit from Experience," Page 187.



Sic — that's really what it says. In this case, though, I don't think Apple's new CEO means what was printed. I assume he really meant "if you *can't* implement it," not only because the sentence as printed is patent nonsense, but also because the importance of implementation — or, as he calls it, Operational Excellence — to a company's fortunes is one of the central themes of the book.

A lesson for Apple

That's clearly a lesson that applies to Apple. Most of its current problems result from failures of execution — that is, from an inability to execute its chosen strategies effectively, rather than from choosing inappropriate strategies.

This is obvious in areas such as forecasting demand and managing inventories, but not only there: The false starts, wasted efforts and damaging delays that have long plagued its system-software and developers-tool efforts are also fundamentally problems of execution.

The 10-to-1 factor

From that perspective, Dr. Amelio is a great choice to lead Apple's recovery: Strong doses of Operational Excellence, taken regularly, will relieve most of the patient's most painful symptoms.

But as I contemplate Apple's situation, I also see a different kind of problem, one that seems harder to fix but could have even more serious consequences over the long haul: the problem of paying for R&D.

It's often said that Apple has to compete with Intel-standard PC clone vendors that spend virtually nothing on R&D. That's not true: Even the most unimaginative Wintel box builders pay for lots of R&D; it's just that they do so not by hiring their own engineers but by paying Microsoft Corp. for a Windows license and Intel Corp. for CPUs. The real difference between the Mac and PC worlds is that in the latter the costs — for everything from new OS features to advanced microprocessor fabs — are spread out over about 10 times as many units.

In the past Apple could afford the R&D that kept it in the lead technologically because its customers willingly paid a premium for a better product. Today, however, it seems clear that many users are no longer willing to pay a significantly higher price for the advantages the Mac still offers; hence Apple has been forced to cut prices to competitive levels to maintain market share. Yet it still must attempt to match Microsoft and (indirectly, through its PowerPC partners) Intel on the R&D front; if it doesn't, sooner or later its shrinking technological lead will turn into a deficit.

This is perhaps the most profound challenge Apple faces — one that will remain even if its new leader succeeds in launching a new era of Organizational Excellence. I can't claim to have a solution, but I do have some thoughts I'll share in a future column. □

Henry Norr, editor emeritus of MacWEEK, welcomes feedback in the MacWEEK forums on CompuServe or eWorld or at henry_norr@macweek.com.

GET YOUR OWN FREE SUBSCRIPTION TO MacWEEK!

COMPLETE AND RETURN FORM.
A complimentary one-year subscription will be sent to applicants who qualify.
We can't process this form unless you:
1) answer all the questions completely
2) sign and date your form
3) use specific numbers when answering questions requesting quantities. Free subscriptions available in U.S. and Canada only.

Required: Full company name and company address must be written below or application cannot be processed. *Please print.* Military: please specify branch of service and name of base (if applicable).

First Name | Last Name

Title | Business Telephone

Company Name

Division | Mail Stop Delivery

Street Address (Where you work) P.O. Boxes not accepted on this line.

City | State | Zip

Business Fax Number

Optional: DELIVERY ADDRESS (Home or P.O. Box). Enter address below only if your company WILL NOT accept delivery to the company address already listed. Address below is:
☐ A. Home ☐ B. Alternate Company Address
Post Office Box or Street Address

City | State | Zip

• **Please start/continue my FREE subscription to MacWEEK.**
☐ 01. Yes ☐ 02. No

1 What is your organization's primary business activity at this *entire* location? (Select one only) Write Answer Here ➡

Non-Computer Related
01. Graphic Arts
02. Publishing
03. Advertising, Public Relations, Promotion
04. Digital Media Development
05. Entertainment/ Broadcast
06. Commercial Printer
07. Service Bureau/ Pre-Press
08. Aerospace
09. Architecture, Engineering
10. Telecommunications
11. Government
12. Manufacturing
13. Education: College/ University/Trade
14. Education: High School/Elementary
15. Finance: Banking, Accounting, Insurance, Real Estate, Legal
16. Health, Medical
17. Non-Computer Retailer, Wholesaler, Distributor
18. Research and Development
19. Agriculture, Mining, Construction, Oil
20. Transportation, Utilities

Computer Related
22. Manufacturer (Computers, Software, Peripherals)
23. VAR, VAD, Systems/ Network Integrator
24. Retailer/Distributor
25. Systems House/Data Processing Service
26. Computer Consultant
27. Other Businesses and Services
99. Other_____ (please specify)

2 What is your job function? (Select one only) Write Answer Here ➡

A. Networking/Data Communications
B. MIS/DP/Information Systems
C. Systems Engineering
D. Telecommunications
E. Graphic Arts/Design
F. Production/Pre-Press
G. Video Production
H. Audio Production
I. Communications/ Publishing/Public Relations/Advertising
J. Engineering/Architecture
K. Science/Research & Development
L. Education/Training/ Development
M. Manufacturing/ Operations/Production/ Quality Control
N. Administration/ Management/Personnel
O. Accounting/Finance/ Legal
P. Sales/Marketing
Q. Purchasing
R. Consulting
Z. Other_____ (please specify)

3 Which of the following brands of systems and/or applications software do you have installed at this *entire* location? (Check all that apply)

Operating Systems
☐01. System 7
☐02. System 6, 5 or earlier
☐03. Unix/Xenix/AUX/AIX
☐04. PowerOpen
☐05. Windows 3.X
☐06. Windows NT
☐07. Windows 95
☐08. NeXTStep
☐09. Solaris
☐10. OSF/Motif
☐11. Other_____ (please specify)

Network Operating Systems
☐13. Novell NetWare
☐14. Unix/NFS
☐15. LAN Manager
☐16. Banyan VINES
☐17. AppleShare
☐18. DEC PathWorks
☐19. Other_____ (please specify)

Groupware
☐21. Lotus Notes
☐22. Windows for Workgroups
☐23. FirstClass
☐24. Novell GroupWise
☐25. Apple Open Collaboration Environment (AOCE)
☐26. Other_____ (please specify)

Database Engines
☐28. Oracle
☐29. Sybase SQL Server
☐30. Ingres
☐31. Informix
☐32. 4D Server
☐33. DB2
☐34. Other_____ (please specify)

On-Line Services
☐36. America Online
☐37. CompuServe
☐38. e-World
☐39. Prodigy
☐40. Internet
☐41. Delphi
☐42. Genie
☐43. Other_____ (please specify)

4 Please indicate the quantities of the computers currently installed and indicate the computers planned for purchase in one year at this *entire* location.

(Write in accurate quantities for all that apply.)

	Currently Installed (Quantity)	PLAN TO PURCHASE
Macintosh/Compatible		
Apple Power Mac 8100	1.	1.☐
Apple Power Mac 7100	2.	2.☐
Apple Power Mac 6100	3.	3.☐
Radius Power Mac Compatible	4.	4.☐
Power Computing Power Mac Compatible	5.	5.☐
Daystar Power Mac Compatible	6.	6.☐
Other Power Mac Compatible	7.	7.☐
Macintosh Quadra	8.	8.☐
Macintosh Centris	9.	9.☐
Macintosh Performa	10.	10.☐
Macintosh PowerBook	11.	11.☐
Macintosh Duo	12.	12.☐
Macintosh Other (II, LC, SE, etc...)	13.	13.☐
Other Mac Compatible	14.	14.☐
Other Desktops		
IBM/Compatible Desktop/Laptop/Notebook	15.	15.☐
PowerPC (Non-Mac Compatible)	16.	16.☐
Workstation (SPARC, MIPS, HP/Apollo, etc.)	17.	17.☐
Other Microcomputers	18.	18.☐

USE NUMBERS ONLY

5A How many servers are installed at this *entire* location? (Use numbers only)

5B How many LANs are installed at this *entire* location? (Use numbers only)

5C How many Macintoshes are connected to the LANs indicated in Question 5B above? (Use numbers only)

6 If applicable: how many Macintoshes are sold, resold, or recommended in one year at this *entire* location? (Answer one only)

A. Retailer: Number sold per year_____
B. Reseller: Number resold per year_____
C. Consultant: Number purchased by your clients through your firm's recommendation per year_____
D. Other: Number sold/resold/recommended per year_____
☐ E. Not Applicable

7A Which of the following Macintosh-related products do you specify, recommend, buy or approve the purchase of? (Check all that apply)

Systems
☐01. Apple Macintoshes
☐02. Mac Compatibles
☐03. IBM Compatible Micros
☐04. Servers
☐05. Workstations
☐06. Minis/Mainframes
☐07. Newton PDA
☐08. Pen-Based Computers

Networking
☐10. LANs
☐11. WANs
☐12. Mac to PC Links
☐13. Mac to Mini/ Mainframe Links
☐14. Mac to Unix Workstation Links
☐15. Modems
☐16. Communication/ Network Software
☐17. Bridges/Routers/ Gateways
☐18. Hubs
☐19. NICS

Printers
☐21. Laser
☐22. Color Laser
☐23. InkJet
☐24. Color InkJet
☐25. Dye Sub
☐26. Thermal Wax
☐27. Plotter
☐28. Portable Printer

Image Input
☐30. Digital Camera
☐31. Flatbed Scanners
☐32. Handheld Scanners
☐33. Slide Scanners
☐34. Drum Scanners
☐35. Black/White Scanners

Displays
☐37. 14 inch
☐38. 15 inch
☐39. 17 inch
☐40. 21+ inch
☐41. LCD Projection Panel
☐42. Presentation Monitors

Peripherals
☐44. UPS
☐45. External Speakers
☐46. Input Devices
☐47. Video Deck
☐48. Image Setter

Storage
☐50. Photo CD
☐51. Magneto Optical
☐52. RAID
☐53. Hard Drive 1 Gig +
☐54. Hard Drive < 1 Gig

Add-In Boards
☐56. CD Recorder
☐57. Memory Boards
☐58. Display Boards
☐59. Video Digitizer Boards
☐60. Accelerator Boards
☐61. Sound Boards
☐62. MIDI
☐63. Video Capture/ Compression
99.☐ None of the above

Your Signature _____

Title _____ Date ___/ ___/___

7B Which of the following systems and/or applications software do you specify, recommend, buy or approve the purchase of? (Check all that apply)

Graphic Arts
☐01. Desktop Publishing
☐02. Electronic Publishing
☐03. Painting/Drawing Programs
☐04. Photo Retouching
☐05. Page Layout
☐06. Illustration Programs
☐07. Fonts
☐08. Pre-Press
☐09. Color Management
☐10. Digital Video
☐11. Other_____ (please specify)

Multimedia
☐13. Authoring Software
☐14. Video Editing
☐15. Sound Editing
☐16. Music Composition/ Editing
☐17. Animation
☐18. Clip Media (Sound and Art)
☐19. Other_____ (please specify)

Presentation Graphics
☐21. Presentation Software
☐22. Multimedia Presentations
☐23. Charting Program
☐24. Other_____ (please specify)

Design/Engineering
☐26. CAD/CAM
☐27. 2/D - 3/D Modeling
☐28. Simulation
☐29. Other_____ (please specify)

Business Applications
☐31. Word Processing
☐32. Spreadsheets
☐33. Databases
☐34. Project Management
☐35. Accounting/Payroll
☐36. Groupware
☐37. Desktop Video Conf.
☐38. Document Management
☐39. Mapping/GIS
☐40. Pen-Based Applications
☐41. Other_____ (please specify)

Systems Management
☐43. Operating Systems
☐44. Utilities
☐45. Applications Development
☐46. CASE
☐47. Programming Languages
☐48. Compilers
☐49. SQL Applications
☐50. Client Server Applications
☐51. Other_____ (please specify)
99.☐ None of the above

8 If you indicated purchasing involvement for computers, computer products or services in Question 7A or Question 7B, for how many Macintoshes do you have this involvement? (Select one only) Write Answer Here ➡

01. 2000+
02. 1000-1999
03. 500-999
04. 100-499
05. 50-99
06. 20-49
07. 10-19
08. 5-9
09. 1-4
99. None

9 For what applications are the Macintoshes at your location used? (Check all that apply)

☐ 01. Graphic Arts
☐ 02. Presentation Graphics
☐ 03. Multimedia
☐ 04. Design/Engineering
☐ 05. Business Applications
☐ 06. Systems Management
☐ 99. Other_____ (please specify)

10 Over the course of one year, do you specify, recommend, buy, or approve the purchase of host systems, desktops, networking products, peripheral equipment and/or software worth: (Write number in box)

1. $5,000,000 or more
2. $2,500,000 to $4,999,999
3. $1,000,000 to $2,499,999
4. $600,000 to $999,999
5. $400,000 to $599,999
6. $200,000 to $399,999
7. $100,000 to $199,999
8. $50,000 to $99,999
9. $25,000 to $49,999
10. $10,000 to $24,999
11. Less than $10,000
99. None

Product Category	For this location (Write number in box)	For other locations (Write number in box)
Host Systems (Mainframes/Minis)	A.	G.
Desktops/Portables (Micros/Workstations)	B.	H.
Networking Products (include Servers)	C.	I.
Peripheral Equipment	D.	J.
Software Products	E.	K.
Service/Support	F.	L.

Indicate additional individuals at this location who might qualify for a FREE subscription to MacWEEK:

Name _____ Title _____

Name _____ Title _____

Name _____ Title _____

PLEASE BE SURE THAT ALL QUESTIONS ARE ANSWERED. V9601
C6TB-7

FOLD HERE FOR MAILING DO NOT STAPLE –TAPE HERE

CHECK ONE ONLY
- ☐ **ADDRESS CORRECTION**
- ☐ **NEW APPLICATION**
- ☐ **REQUALIFICATION**

Place stamp here. Post Office will not deliver without postage.

MacWEEK

P.O. Box 10632
Riverton NJ 08076-0632

FOLD HERE FOR MAILING DO NOT STAPLE –TAPE HERE

ADDRESS CHANGE?

Please provide your old address in the space provided below so that we may update your new mailing address promptly!

First Name | Last Name

Title | Business Telephone

Company Name

Division | Mail Stop Delivery

Street Address (Where you work) P.O. Boxes not accepted on this line.

City | State | Zip

REMINDER:

Complimentary Subscription Application

NOTE: A COMPLIMENTARY SUBSCRIPTION TO MACWEEK WILL BE SENT TO THOSE APPLICANTS WHO QUALIFY. PLEASE ANSWER ALL QUESTIONS COMPLETELY. INCOMPLETE FORMS WILL NOT BE PROCESSED. FOR QUESTIONS REQUESTING QUANTITIES, PLEASE USE SPECIFIC NUMBERS.

LETTERS

NT or not NT?

In the letters column of 02.05.96 (Page 28) Tom Emmerich wrote, "My command is to meet the C2 Trusted Level requirements of the Department of Defense's 5200.28-STD Trusted Computer Security Evaluation Criteria." This requirement was putting his noncompliant Macs under the gun of Windows NT. Well, fire back with:

1. All NT machines *cannot* have floppy disks, or the built-in capability for floppies, because they will not be C2-secure. Our site purchased machines with floppies and everyone thought they were secure. Ha! You can boot from a floppy and kill everything.

2. Make sure your NT machines are not on the Internet. Fire wall or not, they are not secure.

3. If you have physical security at your plant, why bother with C2? The Department of Defense Tempest security requirements were dropped some time ago, and if no one can get to your computer, it's just as secure.

(My experience with NT is that there are so many passwords to enter that everyone just stays logged in all the time if they can, so they really aren't that secure. Again, C2 is a real pain, useless you have physical security.)

4. For security reasons, don't permit Linux users on your network. This approach might get to them because Linux is popular in the government.

Byron Servies
Legato Systems Inc., Palo Alto, Calif.

Visioneer responds

I am writing in response to Stuart Cheshire's letter that appeared in MacWEEK (01.29.96, Page 21). First of all, I am glad to learn that Mr. Cheshire finds his PaperPort 2.0 "a joy to use." PaperPort has been designed to make what has previously been a laborious process — getting paper into a Macintosh and putting it to work — a snap.

The new version of the software, PaperPort 3.5, is a major upgrade. Like most other vendors in the Macintosh and Intel-standard PC industry, Visioneer charges for major upgrades of its products. In addition to being Power Macintosh-native, the upgraded software provides more tools for manipulating, annotating and organizing scanned documents; supports two way drag-and-drop for enhanced filing capabilities; and comes bundled with business-card scanning, a copier utility and OmniPage Lite OCR software. We believe that $69.95 is a fair price for what we are providing.

Additionally, Visioneer does post updates to its PaperPort software, as well as new and updated PaperPort Links on its Web site, CompuServe and AOL forums, which are free to customers. PaperPort Links enable customers to automatically and intelligently integrate scanned paper into the application of their choice by simply dragging and dropping a scanned document onto the application's icon on the PaperPort desktop.

In our effort to provide customers with an excellent value in paper input systems, we have dropped the estimated street price of PaperPort Vx to $299.

Marc B. Randolph
Vice president, marketing
Visioneer Inc., Palo Alto, Calif.

If I ran Apple

If I ran Apple, the first thing I'd do is start with a hefty salary cut. The reason: You don't get better decision making with a higher salary. Furthermore, I and my wife (who would be part of the management team) can live and do the job quite nicely on $300,000 a year. Yes, we would accept stock as part of our compensation, but $300,000 would more than meet our needs.

I'd make employee involvement in the managerial process a reality. Apple has many intelligent and creative people who are not on the executive staff. If it became necessary to lay off personnel due to reduced sales, the first place I'd cut would be in upper management and keep those other creative folks. Of course, if managers were doing their jobs correctly, they wouldn't have their managerial necks in the noose.

I would license the application-specific integrated circuits Apple uses and make them available at a very attractive price to Mac-compatible manufacturers. I'd aggressively pursue manufacturers and software companies to license the Mac OS and create more software. I'd make software development tools as economically available as possible.

I'd introduce an entry-level Mac, which would be a PowerPC Platform 601/120 with 16 Mbytes of RAM, a 1-Gbyte hard drive, a 28.8-Kbps modem and a standard 15-inch monitor at a target price of $999.95. A similarly equipped notebook computer with a dual-scan color LCD for $1,699.95 would also be a goal. Software bundling would cost extra.

Richard Fallstrom
Kingston, Wash.

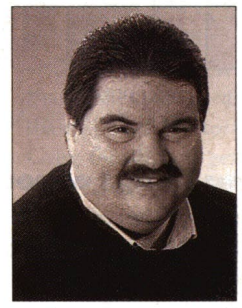
How to contact MacWEEK

Send letters to MacWEEK, 301 Howard St., 15th Floor, San Francisco, Calif. 94105; fax (415) 243-3651. We can be contacted on-line: CompuServe, 76077,1351; eworld, MacWEEK; MCI, 323-1203; Internet, letters@macweek.com. Include your name, address and phone number. We reserve the right to edit for clarity and length.

THE MAC MANAGER DON CRABB

You get a lot more than you pay for with Linux

As important as Copland is to our future, we need to remember that the upcoming PowerPC Platform Macs will be capable of easily running OS/2 (yawn), Windows NT (hmmm), AIX (you've got my attention) and eventually Linux (bingo!). Existing NuBus Power Macs will be the first to run Linux, a bit of information that ought to delight Mac managers who already have older Power Mac iron itching for new capabilities.



Why is this news delightful? Linux has quietly moved from the fringe of the Unix community to its mainstream. It's a freebie Unix variant, maintained in the public domain. It can run on everything from Intel-standard machines to IBM workstations. And now, thanks to Apple and the Open Software Foundation (OSF), Linux will be ported to a number of Power Mac models.

Linux for Power Mac operates on the OSF Mach microkernel, which will be native on the PowerPC microprocessor. Early prototypes are already up and running.

Popularity defined

Linux's natural market is higher education, along with the engineering and scientific research communities. In addition, Linux is the OS of choice for many of the financial companies that keep Wall Street humming.

Linux offers Mac managers the usual suite of Unix services: pre-emptive multitasking, demand-paged virtual memory, shared libraries, demand loading, protected memory, high-performance large file systems, TCP/IP networking and a laundry list of other goodies.

Unlike OS emulation software (Insignia Solutions Inc.'s SoftWindows, for example), Linux for Power Mac will let you use native Linux and other Unix applications directly on your Power Mac, not through some sort of performance-restricted Mac OS Unix emulator. And it's certainly not a cobbled-together half-measure like Apple's previous Unix dalliance — AUX.

Instead, Linux will give Macs a handy and powerful second personality — that of a powerful Unix box — without hampering its capability to provide the complete range of Mac OS services, including Copland. This means your staff can access the best of Linux and the best of Mac OS applications all on the same box.

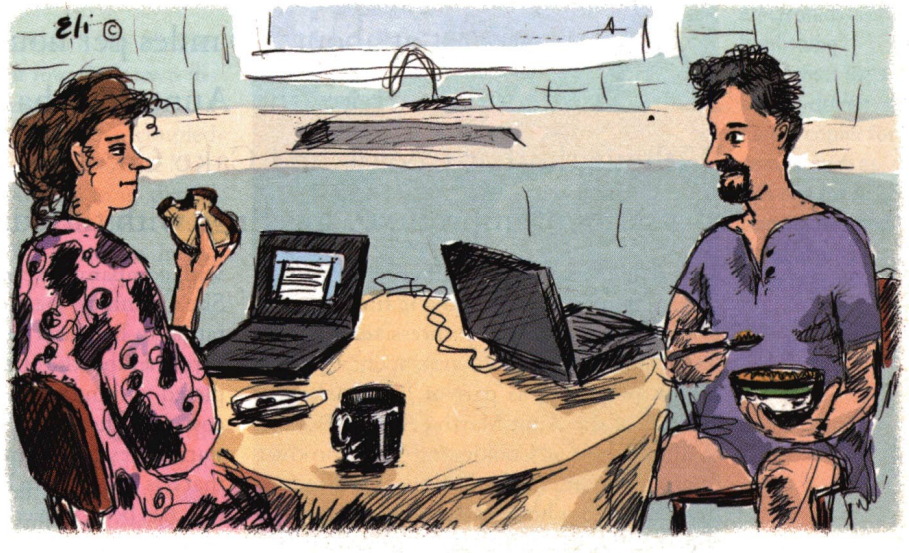
Having Linux available also helps secure the position of other, less well-known Power Mac Unix products — IBM Corp.'s AIX and Tenon Intersystem Inc.'s MachTen. It may finally give the Power Mac the Unix critical mass it needs, which helps open new markets for Apple and solidifies older ones.

Free at last

And unlike AIX and MachTen, Linux for Power Mac will be distributed freely by Apple and the OSF through the GNU General Public License and include the source code for the Mach microkernel and the required Mac driver routines (which will make our in-house developers very happy).

Apple and the OSF said they expect the initial NuBus Power Mac Linux to ship this summer, with PCI Power Mac and PowerPC Platform versions coming later. For more information, point your Web browser to http://www.mklinux.apple.com, http://www.osf.org and http://www.linux.org. □

Don Crabb welcomes comments at his Internet address decc@cs.uchicago.edu. You can also check out his home page at http://cs-www.uchicago.edu/~decc/.



"Would you mind e-mailing me the funnies and the home section?"

Comments? Ideas? Contact Eli at elitoons@aol.com

MacWEEK Guide to Short-run Printing

Short-run color printing brings opportunities — previously out of reach — to use color and economically print what you need to a targeted audience. MacWEEK looks at how you can assess these printing devices for business tasks, examines economical black-and-white printing and profiles a successful print company.

L. TAARKANEEN/LSD

Direct approach to color printing: Short-run demand

By Connie Guglielmo

A plane leaves San Francisco Tuesday at noon heading northeast at about 550 miles per hour carrying seven executives from the Aunt Martha All-the-Butter-Without-the-Fat Cookie and Cake Co. They're on their way to a series of impromptu meetings with the company's 23 sales representatives, who are gathering in Boston.

At 3 p.m. in Boston, Jane is finishing the last few charts for the impressive, 60-page, four-color presentation she's spent the past month preparing as part of her marketing analysis of the Aunt Martha All-the-Butter-Without-the-Fat Cookie and Cake product line. Jane positions the last pie chart, resizes four scanned photographs and leans back contentedly, knowing she's well-prepared for the meeting scheduled in two weeks with company executives on the West Coast. She's planning to take the Mac-based presentation to her local print shop, which has assured her that the offset print run will be completed within two weeks and at a reasonable cost. Just then, Jane's partner at their small start-up research firm tells her about the plane that has just left San Francisco. The presentation has been moved to 3 p.m. tomorrow afternoon in Boston.

Question: Can Jane get 30 great-quality color prints of her 60-page report in less than 24 hours, and can she do so without exceeding the $5,000 credit limit on her charge card?

Short work

If Jane relied on traditional offset printing, the answer would most likely be "No." The traditional printing process is complex, with make-ready time needed to convert the digital files into film that is then made into printing plates, which are then mounted on the cylinders of the printing press. Even if the printer agreed to meet the overnight deadline, the setup cost, coupled with the high per-page cost for such a short print run, would exceed the limit on Jane's plastic.

But users like Jane are in luck because of a variety of short-run color printing technologies that take files from the Mac and output them directly to paper, eliminating the need to create film and plates and shortening turnaround

times. These technologies include a new generation of direct digital presses that don't use metal plates or conventional inks. They are specially adapted color printers and color-copiers-turned-color-printers that are driven by the Mac using PostScript RIPs.

There are many advantages direct digital printing presses offer users over offset printing. Because there's no make-ready process, fast turnaround times are possible, making print-on-demand (when you want it) more of a reality. Developers have also just started to add the ability to customize each page of a print run by changing text and images, which are treated as variable data.

And while offset is still less expensive per page for long print runs, digital presses make short runs — anywhere from a few pages up to about 5,000 pages — cost-effective, with prices anywhere from 20 cents to $2 per two-sided color page, depending on the number of impressions. Short-run print jobs that might not have been economically feasible using offset technology include limited-run promotional fliers, brochures and presentations; short-run systems are also being used to produce inexpensive color "comps" that designers can show to their clients for approval.

However, there are trade-offs with the technology. Printers and users said that these devices produce pleasing color rather than perfect color, and there is a limit on the variety of substrates, such as paper and card stock, the devices support.

Still, these technologies mean that short-run color print jobs can be done cost-effectively. Graphics Express of Boston can deliver 30 copies of a four-color, double-sided, saddle-stitched presentation containing four scanned photographs in less than 24 hours using an Agfa Chromapress direct digital printer, and all for about $3,500, said Paul Beyer, senior vice president of Graphics Express. For about $2,500, Jane's report could have been printed single-sided on a Canon USA Inc. Color Laser Copier turned short-run color printer, said Beyer, whose company has two Chromapresses and five Canon copiers. If the report had been printed using offset technology under the fast turnaround time, the print job would have cost more than $7,000.

DANUTA OTFINOWSKI

Celeste Bantz, production manager at the Heritage Collection, said her company uses two Fiery-driven copiers to produce sales sheets showing textile samples for product lines they license. The company specializes in African designs.

"Things are cheaper on offset, but only if you have the time and the quantity," Beyer said. "There is a window of print jobs that these kinds of short-run technologies are serving. If you want to print a certain number of impressions and you need it with a drop-dead turnaround, then the digital presses or copiers are the way to go."

Choices

In the digital press arena, the names to know are Heidelberg USA Inc., Agfa, Indigo n.v. and IBM Printing Systems Co.

Xeikon released its DCP-1 line of digital presses in April 1994, a line that now includes six system configurations using different RIPs and servers. The Xeikon DCP-1 press is a 600-dpi, PostScript laser device, capable of outputting 4,080 letter-size pages per hour (or 2,040 duplex pages).

Xeikon distributes its product line in the United States through AM Multigraphics. The systems sell at prices ranging from $320,000 for the DCP-1 to $379,000 for the DCP-1/F and 1/S.

Several companies have taken the Xeikon engine and incorporated it into their own direct digital printing solutions. Agfa uses the Xeikon engine in its Chromapress, coupled with an Agfa-developed front end for the Mac.

IBM is also using the Xeikon in its digital printing press, called the IBM 3170, while Barco Graphics North America has introduced a line of DigiPress products designed to work with the Xeikon DCP-1 press. Its DCP-1 PrintStreamer is a fast 32-Gbyte buffer that works between its FastRIP/X RIP and the Xeikon press. PrintStreamer stores RIPed pages, then organizes and manages the data it sends to the press. PrintStreamer manages print jobs by, for example, printing short runs in between longer runs and electronically collating pages so that they are printed in the right sequence.

The other major digital press is the E-Print 1000 from Indigo. Unlike the dry-toner-based Xeikon press, the E-Print, which starts at $450,000 to $500,000, uses a liquid-ink technology that users claim produces vivid colors that are closer to the colors from conventional lithographic process printing. K/P Corp., a commercial printing company based in Berkeley, Calif., that has annual sales of $90 million and specializes in print-on-demand work, installed two E-Print 1000 models in its San Francisco office, one of 14 sites K/P operates in five states. The Indigo presses were brought in to handle the company's color-on-demand business, already handled by K/P's Docutech systems from Xerox Corp. (see story, Page 28).

"The reason we went with the E-Print 1000 was because it was ink-[based], not [dry] toner-based," said Greg Goldman, general manager of K/P's San Francisco facility. "We know the limitations to the toner technology, which has a tough time reproducing things like fine-serif fonts."

So far, each E-Print, which churns out 2,000 single-sided, letter-size pages per hour (1,000 double-sided), has been more than capable of handling K/P's on-demand color business, which Goldman sees as short-print runs from one to 1,000 impressions. While offset offers better quality and better pricing at higher runs, the E-Print 1000 addresses a need in the market, according to Goldman. "What I'm selling is speed and quality," he said. "We can turn things around in 48 hours. If you had a 300-page business report and needed 75 copies of it printed, three-hole punched and bound in a fast turnaround, there's no other place to go."

Digital press with plates

Even though the Heidelberg QuickMaster DI 46-4 uses plates (polyester vs. the old metal plates) to create the final output, it is a direct-to-press solution. It has a built-in digital plate-making component that creates the plates directly from four-color PostScript data; according to the company, it takes just 12 minutes from the time the PostScript file is

See Short run, next page

DIRECT DIGITAL PRINTERS

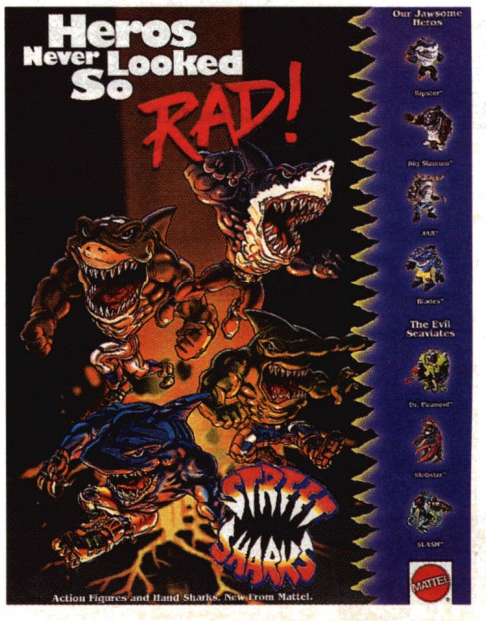
AGFA, DIVISION OF BAYER CORP.
Chromapress: $360,000
Ridgefield Park, N.J.
(201) 440-2500 or (800) 879-2432

AM MULTIGRAPHICS
Xeikon DCP-1: Starts at $320,000
Mount Prospect, Ill.
(847) 375-1700 or (800) 374-6815

BARCO GRAPHICS NORTH AMERICA
DCP-1PrintStreamer: $125,000 to $150,000
Dayton, Ohio
(513) 454-1721

IBM PRINTING SYSTEMS CO.
3170 Full Color Digital Printer: $385,000
Boulder, Colo.
(303) 924-6300

INDIGO N.V.
E-Print 1000: $500,000
Boston
(617) 937- 8800 or (800) 204-6344



Electronic Publishing Specialists uses a Fiery-driven Canon copier for comps, such as this one for Action Figures and Hand Sharks from Mattel.

ColorStream Technologies used a Xeikon DCP-1/F to create comps for Flatlander's Brewing Co.'s bottle labels. The synthetic Teslin labels were put on 500 beer bottles for an investor presentation.

Short run

From previous page

processed and the plates are loaded for the first pages to be printed. Each plate can handle run lengths of up to 20,000 pages.

The filmless press with a Mac interface offers 1,270-dpi or 2,540-dpi resolutions, can print sizes up to 18.125 by 13.375 inches, and can produce 10,000 single-sided pages per hour. Scheduled to ship in the next few months, the QuickMaster (which is a little more flexible than Heidelberg's GTO-DI) sells for about $465,000 for a base unit that includes a Harlequin PostScript Level 2 RIP and a Windows NT server.

Do you copy?

In addition to these presses, service bureaus, pre-press houses and print shops are using high-end color copiers, modified via a specially designed RIP, as short-run color printing devices. These copiers, with the Canon CLC and Xerox Corp. MajestiK line among the most popular, offer a way to get fast, good-quality (starting at 400 dpi), four-color output. The copiers start at about $15,000.

Mac developers have created printer interfaces for these copiers, which differ in RIP processing speeds (the time it takes a document to get from your Mac to the printer), the amount of on-board memory, processors for handling I/O, the resolutions supported at various print sizes, and the bundled software for handling color consistency and print-management jobs.

Among the developers with copier-interface products are Electronics for Imaging Inc., which offers the Fiery XJ line of servers for use with Canon and Xerox MajestiK copiers. ColorBus Inc. offers the Cyclone color copier front end, which sells for between $20,000 and $45,000 and drives Canon, Kodak, Ricoh Co. Ltd., Xerox and Sharp Corp. copiers. Dice America Inc. has the DiceNet line for Canon, Xerox and Ricoh printers.

Randy Green, owner of Los Angeles-based Electronic Publishing Specialists Inc., has been using the Canon CLC with ColorBus Cyclone interface for the past year to provide short-run color printing options to his customers. For the most part, Green said, customers are using the technology to produce comps.

"We found that our clients needed a fast, semi-accurate proof," Green said. He added that the key to maintaining consistent color output is to calibrate the copier every day.

Without spending hundreds of thousands of dollars for a digital press, Green said he has been able to offer short-run color printing as an option. Customers get convenience and good-quality color output at reasonable prices: A four-color copy costs $10 for the first copy and $2 for each additional copy, while tabloid-size pages are $15 for the first copy and $3 for each additional page. Pages can be printed directly from the Mac application that created them.

The quality of the color copies also convinced Heritage Collection, a New York-based greeting card company that also licenses other products, and its sister company, textbook designer Curriculum Concepts Inc., to invest in two Fiery-driven copiers, a Canon CLC and Xerox MajestiK. Production Manager Celeste Bantz said they use the devices to create sales sheets with samples of the greeting-card line. "In the past, we would send out and get color copies of the sales sheets printed and we would only do a color comp [of the greeting cards or textbooks] if it was absolutely necessary," Bantz said. "This technology has given us more latitude during the design process because it gives us a pretty close representation of what the final will look like. The color is not as good as an offset press — it's about 85 percent accurate — but it's definitely good enough for comps."

Also building on the foundation of these color copiers is Scitex America Corp. It is readying the Spontane, a $199,000 digital print system that combines a Scitex front end and software with a Fuji/Xerox imaging engine. The Spontane will output 40 letter-size pages per minute at 400-by-400-dpi (2,400 single-sided pages per hour; 900 pages duplex).

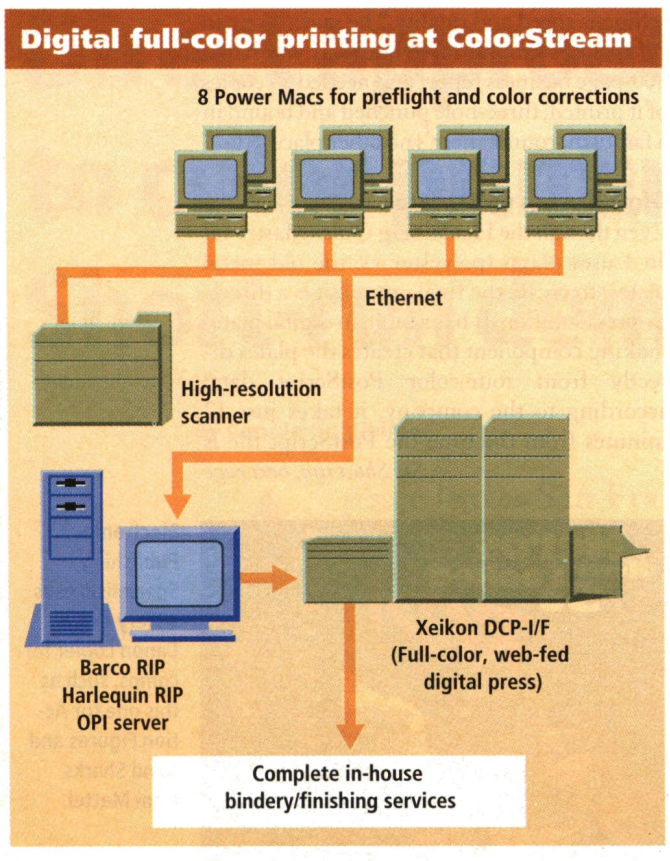
Color printers

Taking a different approach to the short-run market, T/R Systems Inc. offers the MicroPress. Driven by Harlequin Inc.'s ScriptWorks RIP and T/R's proprietary card, an array of Canon P320 laser print engines work together as a single device to provide a short-run system. PrintStation, a system with four print engines, starts at about $50,000. Each printer runs at 3 ppm for four-color pages at resolutions starting at 600 by 600 dpi.

For most users, the issue of which technology — digital press, copier-turned-printer, offset printing — to choose will depend on price, quality of the printed output and turnaround time. But while the news is good for users looking for a variety of options and price points, it can also be confusing. At the same time, printers — pre-press firms, service bureaus, print shops — are still trying to figure out a way to make money using these technologies (see Commentary, Page 32). The high cost of the presses and consumables means that printers need to spend time educating users about the technology.

That's what George Willock, managing director of Chicago-based ColorStream Technologies LLC, and partner David Mayberry said they have been doing: educating users. Knowing that these various short-run color technologies exist may change the way designs are created, Willock said. Willock and Mayberry launched their print-on-demand business in March 1995 around the Xeikon DCP-1/F, specifically targeting users who need short-run color jobs of one to 1,500 pages.

"We don't go after the conventional offset press market," Willock said. "We are going out and educating the industry on what this digital press can do and showing the graphics arts community how they can utilize this press when they're pressed for time. Instead of press times that can run from five days to one month, we can turn things around in 24 hours to five days. We give agencies the flexibility to take their ideas and turn them around quickly and take printed pieces off the press in different stages of the design process." □



DIRECT-TO-PRESS

HEIDELBERG USA INC.
QuickMaster DI 46-4: $465,000
Kennesaw, Ga.
(770) 419-6500
(800) 437-7388

COPIER INTERFACE MANUFACTURERS

COLORBUS INC.
Cyclone: $20,000 to $45,000
Irvine, Calif.
(714) 852-1850 or (800) 742-2695

DICE AMERICA INC.
DiceNet: $31,500
Suffern, N.Y.
(914) 369-3600 or (800) 860-0648

ELECTRONICS FOR IMAGING INC.
Fiery XJ: $17,000 to $33,000
San Mateo, Calif.
(415) 286-8600 or (800) 285-4565

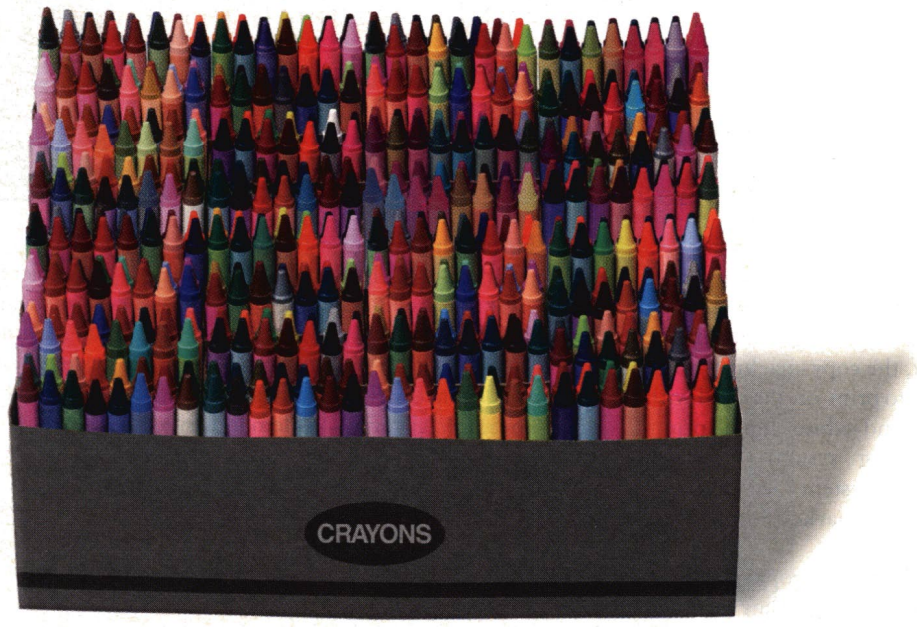
SCITEX AMERICA CORP.
Spontane: $199,000
Bedford, Mass.
(617) 275-5150 or (800) 685-9462

COLOR PRINTERS TURNED SHORT-RUN PRESSES

T/R SYSTEMS INC.
MicroPress: $36,000 for a two-PrintStation system; $50,000 for a four-PrintStation system
Norcross, Ga.
(770) 448-9008

Some people scan in RGB

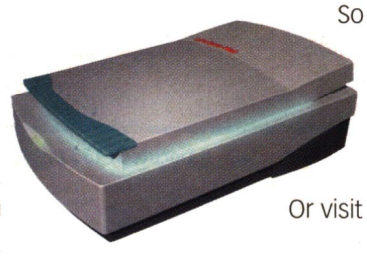
Some people scan in CMYK



Maybe you should see what happens when you scan in CIELAB

The only way to capture the maximum amount of color data from your original is to scan into the CIELAB color space. And the only way to scan in the CIELAB color space on your desktop is with the new SAPHIR scanner with LinoColor™ software, from the world leader in high-end color scanning: Linotype-Hell.

SAPHIR provides fast one-pass scanning and ColorSync® 2.0 compatibility. LinoColor software provides the most powerful color software ever put into a desktop system. Basically, it gives you the same color capabilities that prepress shops and printers have been using for years. Yet it's so easy to use that even novices can achieve professional-quality results in almost no time at all.



So why limit yourself? Get the full color you deserve. With SAPHIR and LinoColor. Only from Linotype-Hell. For more information, call 800-842-9721. In Canada, 800-668-0770. Or visit us on the Web at http://www.linotype.com

Linotype-Hell

© 1995 Linotype-Hell Linotype and Hell are registered trademarks; LinoColor is a trademark of Linotype-Hell AG and/or its subsidiaries. ColorSync is a registered trademark of Apple Computer, Inc.

MACUSER EDITORS' CHOICE AWARD 1995 WINNER

Customers demand black-and-white, too

By Mark Baard

For many in the burgeoning print-on-demand market, black-and-white has become the color of money. Since 1990, print shop owners and their customers have been discovering the savings that black-and-white print-on-demand can offer, as well as the new markets it can create. The printing divisions of Xerox Corp., IBM Printing Systems Co., Siemans NixDorf Informationssystems AG and Eastman Kodak Co. have all designed systems producing high-speed (some up to 400 pages per minute), high-quality (all of them 600 dpi) black-and-white documents from PostScript files or scanned originals.

The Xerox and Kodak machines are as easy to operate as the high-speed copy machines they're fast replacing, which might explain why Xerox, the copy-machine giant, has led the charge into print-on-demand with its Docutech black-and-white digital print-on-demand publishing system. (Kodak's LionHeart Printing System accounts for the 15 percent of the market Xerox does not command.)

The Docutechs look like copy machines found in every office, though they're much bigger and somewhat smarter. They are toner devices with front-loading paper trays, built-in original document scanners and optional bindery attachments for in-line finishing, all managed by a software package that processes and saves PostScript files as proprietary files for future output.

On site, in use

Strategy Manufacturing Inc., a black-and-white print-on-demand service in Hayward, Calif., has a Power Mac-based system for downloading and tracking PostScript files from its Internet FTP site.

"It's a simple but effective system," said Patrick Collins, Strategy manager of information systems and technologies. "We have a Power Mac running [Claris Corp.'s] FileMaker Pro file server, so when a customer says, 'I want A, B and C again,' we can retrieve the right 8mm tape [containing the Xerox proprietary files]."

Collins also uses Power Macs and Quadras for archiving his customers' PostScript files to other removable media for off-site storage, part of Strategy's disaster-recovery plan.

Printing textbooks

Cornell University in Ithaca, N.Y., prints textbooks and student course packs from scanned originals and PostScript files on its three Docutech systems (including the smaller, 90-ppm Model 90).

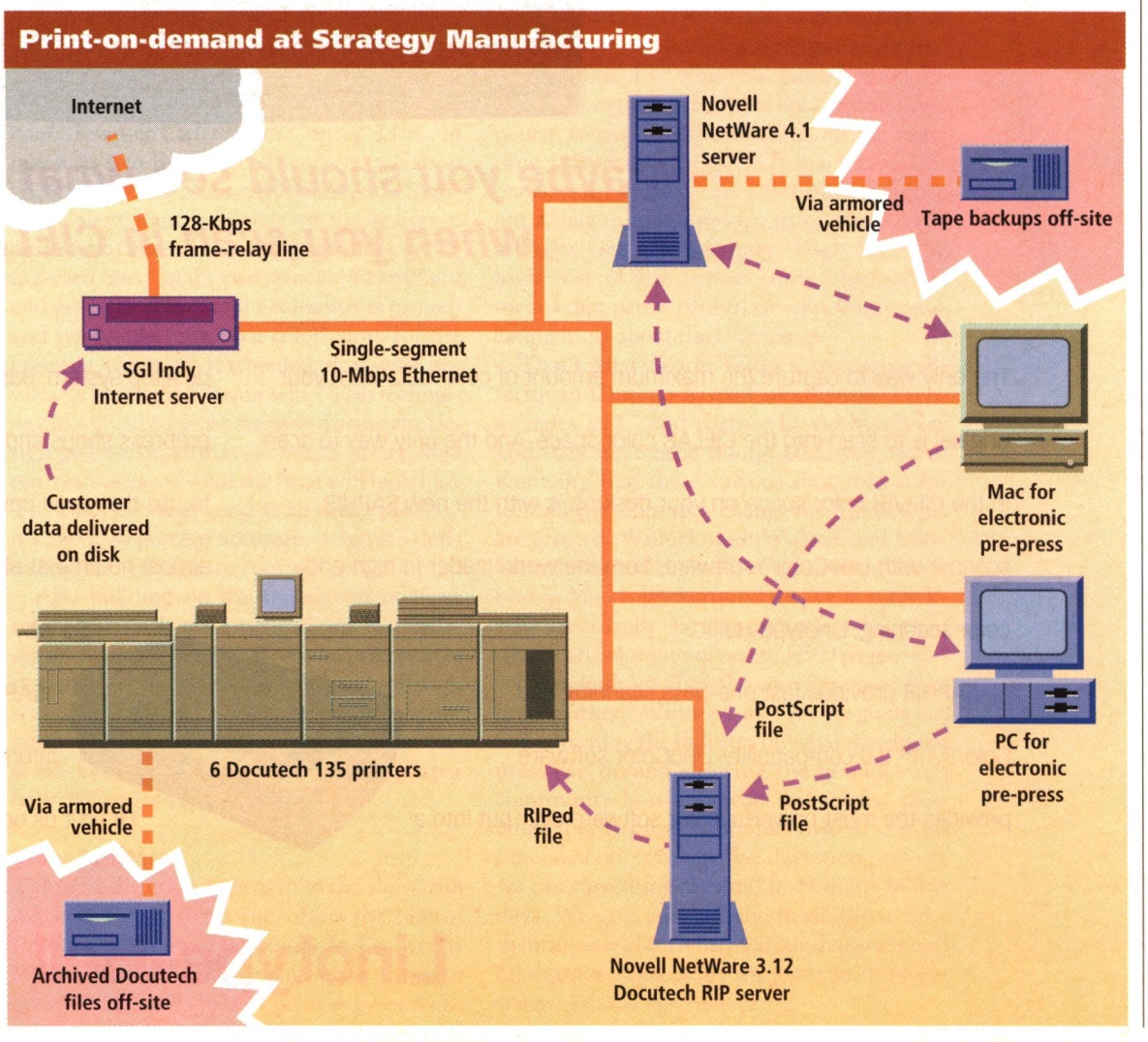
"We rely on [the Docutechs] to get us through those last two weeks of August, which is our busiest time," said Rod Perkins, manager of Cornell's digital print shop.

For commercial print-on-demand sites, PostScript files received through network-to-network connections and via the Internet are the choice format for original copy. "We print from these [archived files] again and again, 500 at a time," said David Rietz, publishing systems engineer for Stream International Inc., which prints software documentation for Microsoft Corp. and Apple. Harnessing the

See Black-and-white, Page 32

MICHAEL GREENLAR/BLACK STAR

Rod Perkins, manager of Cornell University's digital print shop, scans in copy on the Docutech.



REAL BIG COLOR®

starting at **$12,995***

The solution for all your digital printing needs—from color laser copier originals to 54-inch Big Color.

ColorMark™ Color Management System Prints Right—First Time, Every Time℠

Real Big Color® comes only from LaserMaster. And it's now available at a price that will make your spirits soar!

Now every business can afford the consistent, accurate color and photo-realistic quality that have made DisplayMaker™ Pro *The Professional's Choice* for large-format digital color printing.

The new ColorMark Software/RIP provides outstanding color, fast file processing, and other productivity features that make Big Color printing simple and efficient.

Get affordable, gorgeous, real Big Color. Call for details today!

(800) 477-7714 **DEPT. L90**

LM® LASERMASTER®

The Professional's Choice®

Corel Optimized POWERPAGE

* Requires a dedicated Windows™ NT-compliant system.

©1996 LaserMaster Corporation. (612) 944-9330; In Europe call: (31) 2356-22000. These products incorporate the PowerPage interpreter from Pipeline Associates, Inc. Prices in U.S. dollars and valid in the U.S. only. Prices and specifications subject to change without notice. This ad was produced using PressMate™-FS chemical-free film. Contact us on the Internet at http://www.lasermaster.com

CASE STUDY

Business is taking off for digital press owners

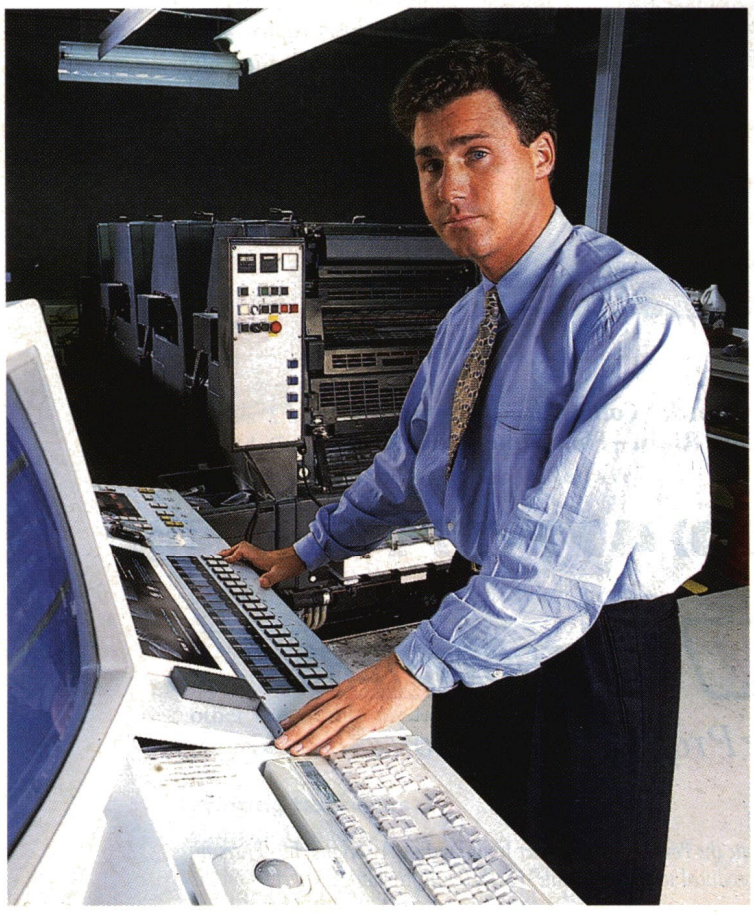
By Leander Kahney

Rod Hume was trained as a typesetter by his dad, a Toronto-based printer. Hume saved his money while working the night shift in a printing plant there. Seven years ago, at the age of 21, he launched an electronic pre-press business with $9,000 in savings and another $9,000 borrowed from his dad.

Hume chose the fledgling electronic pre-press industry because of its potential for growth and his expertise. He chose California because of the climate.

Today, at 28, Hume is the founder and president of Linotext America Inc., operators of — its owners say — the largest digital printing facility in the world. What began as a back-room pre-press service bureau in Cupertino, Calif., has grown into a digital printing company with four plants, annual revenues of $13 million and 75 employees.

Hume started in a small office behind Apple's headquarters with a couple of Mac IIs, a Linotype-Hell L300 imagesetter and two employees. By the end of the first year the company earned $150,000. Hume bought two more L300s and hired four more people. He also brought in his friend Duane Sincerbox, a 50-year-old Stanford University engineer who knew how to fix printers and wanted to invest some savings. They opened two more pre-press shops nearby.



Rod Hume, founder and president of Linotext America, was one of the first 25 sites to receive Heidelberg direct-to-press printers in 1992.

Branching out

In 1991 Hume decided to move into print-on-demand after seeing a digital press at a Chicago trade show. "It was amazing," he said. "You had an image on the Mac, and 15 minutes later you were printing it." Hume persuaded the manufacturer, Heidelberg America Inc., to add Linotext's name to its list of potential customers. "We were about No. 25 on the list, but no one above us would touch it," Hume said. "I think they were afraid of laying out a lot of money and taking a risk on something they didn't know would work. But we had the money, we had the space to install it, and we had a 'we'll make it work' attitude."

Hume signed a six-month rental agreement before deciding to buy the $500,000 machine on a five-year lease. Initially, there were problems with the quality of the electrostatic plate-etching process. But by early 1994 the technology was updated to a laser-based one, and quality took off. Hume decided to open a fully digital plant in Cupertino.

Located in a 20,000-square-foot warehouse, the plant's five digital presses make it twice the size of the next-largest fully digital facility, Hume said. But when the state-of-the-art $2.5 million plant opened last fall, there was not yet a significant market for print-on-demand — short runs of less than 5,000.

That's because most people who use printing services didn't know they could have cost-effective print runs for small-quantity jobs. Previously, the economics of printing prohibited runs of less than 10,000 pieces because of the costs of preprocessing, labor and materials. But digital presses dispense with the pre-press stage altogether; output is directly to the press, much like output to an office laser printer. Sincerbox, now Linotext's chief operating officer, said the process can save up to 40 percent in costs, and print time can be almost halved.

A whole new way of working

The savings have created a new market. Companies can now afford to print limited, full-color runs. "Digital printing's created a whole new layer of business rather than taken a slice of the old," said Fred Buck, Linotext sales manager. "We're tapping into a market that never existed before. Limited, full-color runs couldn't be done in the past, but now that they can, people are starting to see what they can do with it."

Linotext's customers range from individual designers and graphic artists to major corporations, including NASA, IBM Corp. and Apple. They want a wide variety of things printed: small books, merchandising leaflets, limited-run posters, data sheets, wedding invitations, video box covers and CD inserts. Hume expects the market to grow rapidly. "At the moment, 60 percent of our sales are pre-press, 40 percent comes from digital printing," he said. "Within six months the [percentage] will be 50-50, and by the end of the year it'll be the other way around. I think [customers] are becoming sold on digital printing mainly because of the speed. People really like it when their work is returned in a day or two."

The right choice

Speed and quality determine which press Linotext will use. At the Cupertino plant there are three Heidelberg GTO-DI color presses, which, Hume said, deliver the highest quality. The Heidelbergs are like older offset presses, except they etch their own printing plates using banks of lasers mounted below each color roller. The plates are made of titanium sandwiched between layers of silicon and aluminum. The lasers cut through the ink-repelling silicon to the aluminum, creating recesses, which then transfer the ink to the paper.

The Heidelbergs can handle runs of up to about 30,000, but jobs typically number between 1,000 to 2,500 and can be quite cost-effective, Sincerbox said. An average run takes about four hours, start to finish — much quicker than older presses. Time savings are gained at the make-ready stage: It takes from about 20 to 45 minutes to prepare for each run, which includes color separation and the time it takes to rasterize a file, compared with an hour and a half for older presses. Print time is about the same — 100 pieces a minute. "When the actual printing takes so little time, the issue then becomes how quickly you can prepare the press," Sincerbox said

One client, Gist & Erdmann, an advertising and marketing company based in San Jose, Calif., recently commissioned an 8,000-piece direct-mail flier for a Web-publishing customer. Linotext turned it around in three days because of drying time and a backlog of work. The client was delighted. "This stuff is phenomenal," said partner Jerry Gist. "It should take a week, but we got it in days. It gives us extra time, we can work right up to the last minute."

The Heidelberg front end is a pair of Power Macintosh 9500s, each fitted with 150 Mbytes of RAM and 5 Gbytes of hard disk space between them. The 9500s work with two Intel-

See Case study, Page 32

VisionTek: http://www.visiontek.com ©1996

Elevate your expectations. Soar to maximum productivity. With VisionTek's lifetime-guaranteed 100%-compatible PC cards and memory modules. Supported with toll-free Tek-Support, Tek-Fax, Tek-BBS and Tek-Web technical assistance. And our exclusive Corporate Assistance Program. So you and your system can really take off. **1-800-360-7185.**

VISIONTEK™

Case study

From Page 30

standard PC-based Hyphen RIPs, which are networked directly to the presses. Proofing is done by a pair of color Iris printers, controlled by two Power Macintosh 7100s.

Jobs are offloaded from disk, modem, T1 or ISDN (Integrated Services Digital Network) line. Linotext has four shops—one in San Francisco, one in Palo Alto, Calif., and two in Cupertino— all connected by high-speed T1 lines, allowing them to send jobs from one to another, often to even out the workload. All of Linotext's operations — such as job tracking to accounting — are done on the Mac.

Faster still

Jobs with really quick turnarounds are handled by AM Multigraphic's Xeikon DCP-1, located on the other side of the plant. "The Xeikon's lightning-fast," Buck said. "Most jobs can be returned to the client within 24 hours."

The machine looks like a large charcoal supercomputer with a roll of paper at one end and a collection tray at the other. It's hooked up to a pair of Power Macintosh 8100s, each with 128 Mbytes of RAM and a 1-Gbyte hard disk. "The Xeikon's similar to a four-color photocopier with a fast paper feed," Buck said. "It prints both sides simultaneously, and pages are cut and dried before they leave the box."

Buck said Xeikon runs are typically short, between 25 and 1,500, averaging 500. "Either a client wants the stuff back as quickly as possible and is willing to sacrifice a little on quality, or they want a trial run to see what it looks like before they do it on a better-quality press," he said.

Linotext is also experimenting with T/R Systems Inc.'s MicroPress, a PC-based RIP connected to four PrintStations — color laser printers wired in parallel. The system is the only one in California and is used for short runs of mainly monochrome documents, Sincerbox said. He added that Linotext has yet to find a solid role for it.

Acquisition of the MicroPress is typical of Hume's experimental approach to business. "We'll take it on even if it isn't clear where it'll fit in," Hume said.

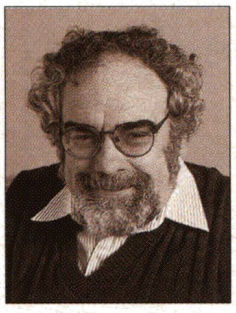
Gist, of Gist & Erdmann, said of Hume: "Rod's an empire builder. He's pretty young to have built a company that size. He's like a musician with perfect pitch, but he's got perfect pitch in business. They should be teaching his business model at an MBA course at Harvard." □

COMMENTARY STEVE HANNAFORD

Digital printing: Hard way to make money

There is no doubt that color printing on digital presses offers major opportunities to those customers ready to use the technology. But technical, marketing and economic factors are slowing down this would-be juggernaut.

The past year has seen several setbacks in the rush to digital presses. Pioneer Indigo n.v. recently announced serious losses and a cutback in staff, despite rather high sales. Indigo has penetrated the market with more than 200 units sold in the United States. Sales of the other digital color presses from Barco Graphics Inc.; Agfa, a division of Bayer Corp.; and Xeikon n.v. are moving at a deliberate pace. Heidelberg USA Inc.'s QuickMaster DI, a near-digital solution (direct-to-plate on the press) is months late in arriving on the market. Scitex America Corp.'s Spontane (on the copier end of the continuum) has been slow to market.



The bottom line is this: In the estimated $25-billion-a-year commercial printing market, digital printing, based on the digital presses out there, has barely crossed the $100 million mark in annual sales.

Technical hurdles

In short, it turns out that the technology is at a level of difficulty that goes beyond earlier digital developments, such as dye-sublimation printing or imagesetting. The basic requirements for putting high-quality color at high speed on both sides of the paper have proven impossible to master on the first try.

Mastering the paper flow, drying and positioning are exacting processes, especially when high-speed output is required. Combine this with the delivery of digital information on the fly, and it's no surprise that perfecting this technology is a gradual process.

Money matters

All this technology has come at a significant cost. The principal models cost between $400,000 and $550,000. Companies new to printing have to invest in cutters, folders and binders. Those expenses plus the special cost of inks and toners and, in some cases, specially treated paper, mean that the per-page cost of printing is high. Thus, there is a narrow threshold for mistakes.

That brings up the issue of markets. As it turns out, generating the market for the short-run, quick-turnaround color press output has been slow. Each press owner has had to establish his market from scratch. For most, it has been a trial-and-error process. The key is finding sales gimmicks: One company creates customized sets of baseball cards for various local sports teams; another makes laminated promotional phone calling cards with several dollars' worth of free calls included.

At least in the larger markets, serious competition for those clients has developed. Of course, this would be less of a problem if the markets were growing faster.

Color digital printing has found itself in a very narrow wedge. While the digital printing companies were projecting a run length of between 30 and 1,000, our sources tell us that the majority of jobs are either very short runs of 50 or longer runs of about 500. Below 50, the color copiers get the job. Above 600 or 700, standard sheet-fed presses get very competitive.

So for the buyers of these machines, many of whom are small-to-medium-sized pre-press shops and service bureaus, digital color presses have been a big gamble.

The future

Given all these factors, it's surprising to find that there are still plenty of potential buyers eager to invest in a digital press. Some believe that they have the great secret marketing angle that will make the machines rake in profits. Others are determined to buy as soon as the presses get faster or less expensive or both. Still others look nervously over their shoulders at their competitors.

Given the explosion of the color copier market, it stands to reason that, once the technology makes a few more advances, the market for digital color presses has got to expand. Existing vendors are improving their offerings, step by step.

For many pre-press managers, print shop owners and service-bureau bosses, this technology is the inevitable next step. The big question is how soon to take it. While this market is still crawling on all fours, with the right factors, it is poised to accelerate rapidly. □

Steve Hannaford is a MacWEEK contributing editor and editor/publisher of Prepress Business Observer of Swarthmore, Pa. He can be reached at stevehann@aol.com.

Black-and-white

From Page 28

short-run capacity and 135-ppm horsepower of its 10 Docutech 135s, Stream can print as many documents as are needed, leaving no extras in the warehouse.

"The life span of a software product can be pretty short these days," Rietz said. "So it doesn't pay to have a pile of stock sitting in the corner that may never be ordered."

Another bonus of the Docutech 135, according to users, is its three front-loading paper trays. This allows for printing on three different kinds of stock, which is impractical on both conventional, web-fed presses where replacing a roll of paper can require a forklift, and on high-speed copiers, which can't handle as wide a variety of paper weights.

Nuts and bolts

The Docutech is a solidly engineered machine. Aside from the downtime required for daily maintenance and occasional belt adjustments, companies such as Stream drive their Docutech 135 machines 24 hours a day, seven days a week, cranking out 135 ppm, double-sided as needed, at near-offset quality, 600-dpi resolution. The three paper trays can accommodate different weights and sizes of paper.

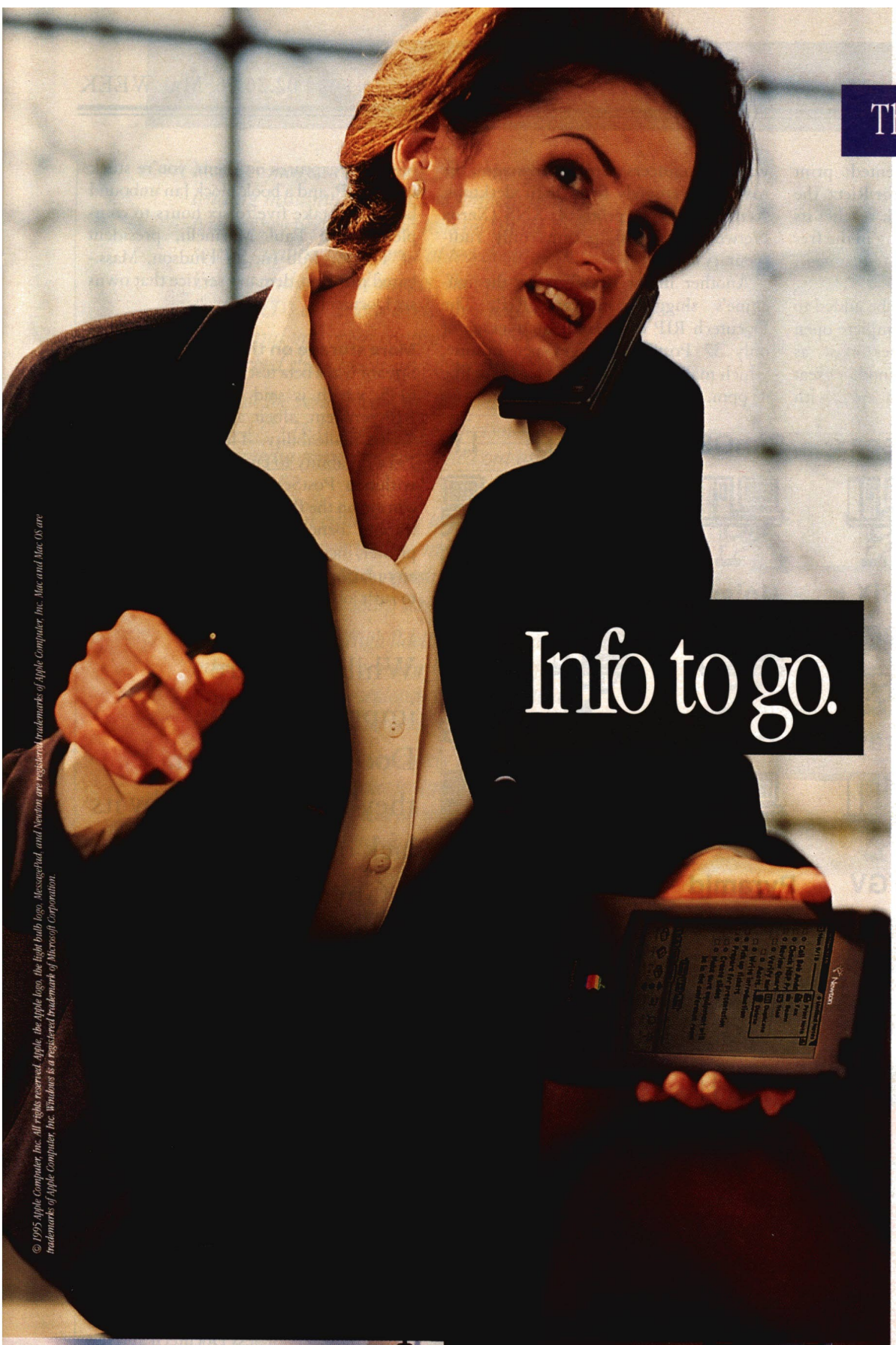
Additionally, the machine is capable of handling up to 110-pound signature stock through its printer and internal finisher, which stitches or thermally binds printed documents before they leave the system. Two of Stream's 10 135 machines utilize the company's Signature Booklet Maker attachment for extended in-line finishing options. Still,

See Black-and-white, Page 34

HIGH-SPEED BLACK-AND-WHITE PRINTING SYSTEMS

XEROX CORP.
Docutech Production Publisher 135: $260,000
Rochester, N.Y.
(716) 231-7529

EASTMAN KODAK CO.
LionHeart Printing System: ImageSource 92P: $198,000
Rochester, N.Y.
(716) 724-4000
(800) 255-3434



© 1995 Apple Computer, Inc. All rights reserved. Apple, the Apple logo, the light bulb logo, MessagePad, and Newton are registered trademarks of Apple Computer, Inc. Mac and Mac OS are trademarks of Apple Computer, Inc. Windows is a registered trademark of Microsoft Corporation.

For the reseller nearest you, or
to receive information via fax, call

1 800 909-0260

Visit us on the Web at:
http://www.info.apple.com/newton

The New, Enhanced Apple MessagePad 120.

The new Apple® MessagePad® 120 is powered by the just-released Newton® 2.0 operating system, recent winner of "Best of COMDEX" in its category at COMDEX '95.

You're organized while you're mobilized.

Weighing only 1 lb., the MessagePad 120 has the functions of an electronic organizer, and more. It stores hundreds of names, phone and fax numbers, street and e-mail addresses. It keeps track of your schedule. You can write to-do lists, notes, memos, or even make sketches. Its handwriting recognition has been greatly improved.

BEST OF BYTE COMDEX Fall '95

It not only organizes, it communicates.

The MessagePad 120 works with the way you communicate today. It can send and receive faxes. It also allows you to receive wireless paging messages and news bulletins. You can exchange e-mail via the Internet. It even has an optional keyboard so you don't have to carry a laptop.

An easy connection to your PC.

The new MessagePad 120 connects to both Windows and Mac™ OS-based computers. So you'll be able to create backup files, take your PC files with you, or access your PC from the road. That's because, with new connection software, you can easily download and upload data from your personal computer to your MessagePad 120.

Check out the new Apple MessagePad 120. You'll soon discover how it can make you more efficient and productive when you're on the go.

The New Apple MessagePad 120

Newton

Black-and-white

From Page 32

commercial printers generally favor traditional off-line finishing solutions.

While users are impressed by the Docutech's brawn, they're a bit put off by its lack of brains. As it is, Xerox's system lacks the ability to store its proprietary files, the aptly named Docublobs — Docutech Binary Large Objects — to an open system, which isn't an immediate concern for smaller, education-oriented print shops such as Cornell's. But for Rietz, the Docutech's 1-Gbyte hard disk reaches its capacity very quickly, resulting in the frequent and awkward juggling of magneto-optical disks.

"The best thing that could be added to the Docutech would be a complete open system where the machines exist as TCP/IP clients," Rietz said. Another great help, he said, would be an API with which engineers could manage the machines remotely from their desktops. Xerox's network protocol, XNS (Xerox Network Systems), permits only rudimentary access.

Another major drawback is the machine's sluggish software RIP. The Docutech RIP can handle an average of only 37 PostScript pages per minute, which makes 135 ppm feel a lot more like 45 ppm. "If you're printing pages with a lot of screen captures on them, you're stuck in the RIP, and a book block [an unbound book] will take five to six hours to complete," said Paul Marinelli, president of TecDoc Pub Inc., a Hudson, Mass.-based print-on-demand service that owns six Docutechs.

More storage on the way?

Stream was a beta test site for the Docutech 6135, which is said to have licked the RIP problem, albeit at the cost of PostScript malleability. The 6135 lacks the 135's capability to cut and paste elements within a PostScript file, which enables editing on the fly. "[The 6135] has the limits and benefits of your average laser printer, including the ability to print from any platform, which makes it well-suited to rush jobs," Rietz said.

> While users are impressed by the Docutech's brawn, they're a bit put off by its lack of brains. The 1-Gbyte hard disk reaches capacity quickly.

Rietz said he is also cautiously optimistic about Xerox's effort to relieve the Docutech's storage problems. "We have tested their TCP/IP module that allows their machines to send files to an open network, and it seems to work OK, though it's been a long time coming," he said.

Xerox's recent attempts to address the Docutech's chronic speed and storage problems are not because of customer complaints alone. IBM and Siemans-NixDorf are likely to up the ante with web-fed systems promising 600 dpi black-and-white at a screaming 400 ppm. Some speculate that these systems will fill a perceived gap between the 500-or-less Docutech and the traditional 1,500 short-run presses. But TecDoc's Marinelli disagrees.

"We don't subscribe to the theory that the Docutech is only good for runs up to 500," he said. "We've found it's good up to 1,500 to 2,000."

As for Kodak's LionHeart Printing System, at slightly less than $200,000 (sans flatbed scanner, which is optional for the ImageSource), the ImageSource 92P printer will likely remain a more flexible, low-cost alternative for black-and-white print-on-demand. And the system already supports networked printing from most platforms, including Macintosh, an option that hasn't been available to frustrated users of Xerox's proprietary software.

Will color systems take the place of black-and-white print-on-demand? Not in the near future. For now, according to Stream's Rietz, "Nothing can compete with the cost-per-page savings that comes with black and white." □

Stratus
Ultrix
HP/UX
Solaris
Auspex
SunOS
NetBSD
Pyramid
IBM AIX
NeXT
Distinct
IRIX
Unisys
SCO UNIX
NetBSD
Linux
Univel
Process
Cray
Stratus
Wollongong
Unisys
NetManage
TGV
Pyramid
FTP
IBM AIX
SGI
Digital UNIX
OT-Compatible
HP/UX
NeXT
SunOS
Linux
Pyramid
SO MANY SERVERS
NFS/Share™ allows Macintosh users to take advantage of distributed file sharing in a multivendor environment. Based on Sun Microsystems' Open Network Computing/Network File System (ONC/NFS), NFS/Share provides seamless access to NFS-supported services such as UNIX files, IBM mainframe systems, VMS hosts, and PC servers.
IN SO LITTLE TIME
NFS/Share is the fastest NFS client on the market for the Macintosh, approaching file access rates of one megabyte per second—the equivalent of 250 pages of text per second! NFS/Share is an essential tool for any company that requires large file sharing across a network. With its seamless connectivity and ease-of-use, NFS/Share minimizes info-sharing hassles and maximizes profits.
ONC/NFS
NFS/Share
Accelerated for Power Macintosh
Free Trial! Call 1-800-468-7266 dept. #130, or download it from our Web site at http://www.intercon.com/nfsshare/130/
InterCon
InterCon Systems Corporation ■ Phone: 703.709.5500 ■ Email: nfsshare@intercon.com
All brands and product names mentioned are trademarks of their respective owners.

When it comes to rating multimedia monitors,

MacUser *magazine recently put some of the leading multimedia monitors through their paces. They performed lab tests on image and sound quality. They stared at test documents, line art and scanned images. They played their favorite CD's at various levels. They fiddled with knobs and on-screen controls. And they researched street prices and warranties.*

After all the results were in, the ViewSonic 17GA 17" (16.0" viewable) PerfectSound™ multimedia monitor was singled out as the "Best Buy."

No wonder. An entirely new technology creates the ultimate screen image–maximum resolution of 1,280 x 1,024, refresh rates as high as 160Hz, and razor sharp screen definition.

And listen to this. High fidelity speakers are integrated into the monitor bezel so the full, rich stereo sound envelopes you. To quote a satisfied customer, "It rocks, man!"

And the 17GA is so attractively priced, it's like getting the multimedia feature for free. Several competitive models cost as much but are not even multimedia monitors.

AppleVision® 1710AV
$1159*

mice are nice but checks are better.

ViewSonic® 17GA
$850*

Rather than toot our own horn, perhaps we should refer you to MacUser *magazine: "A real multimedia bargain," they said, "the ViewSonic 17GA offers solid image quality, warm colors, fine-sounding audio and a slew of easy-to-use on-screen controls." So when you're ready to buy, remember this: Many 17" (various viewable) multimedia monitors come with mice, but only the ViewSonic 17GA has been selected as* MacUser *magazine's "Best Buy."*

MacUser RATED DECEMBER 1995

+/OUTSTANDING	•/ACCEPTABLE	−/POOR			
RATING	PRODUCT	PRICE	SUPPORT	IMAGE QUALITY	SOUND QUALITY
★★★★	**ViewSonic 17GA**	•	•	+	•
BEST BUY	A real multimedia bargain, the ViewSonic 17GA (estimated street price, $850) offers solid image quality, warm colors, fine-sounding audio, and a slew of easy-to-use on-sreen controls—all at a competitive price. The stylish case will also make you the envy of your office mates.				
★★★★	Apple Apple Vision 1710AV	−	•	+	+
★★★½	IBM 17S/S	−	•	•	+
★★★½	Nokia 447W	•	•	+	−
★★★½	Panasonic Pana Media 17	•	+	•	•
★★★	Philips 17B	•	•	•	−
★★½	Philips Brilliance 15A	•	•	•	−

Reprinted from "MACUSER," December 1995, Copyright © 1995 Ziff-Davis Publishing Company.
* Estimated street price per "MACUSER" magazine, December 1995.

ViewSonic®

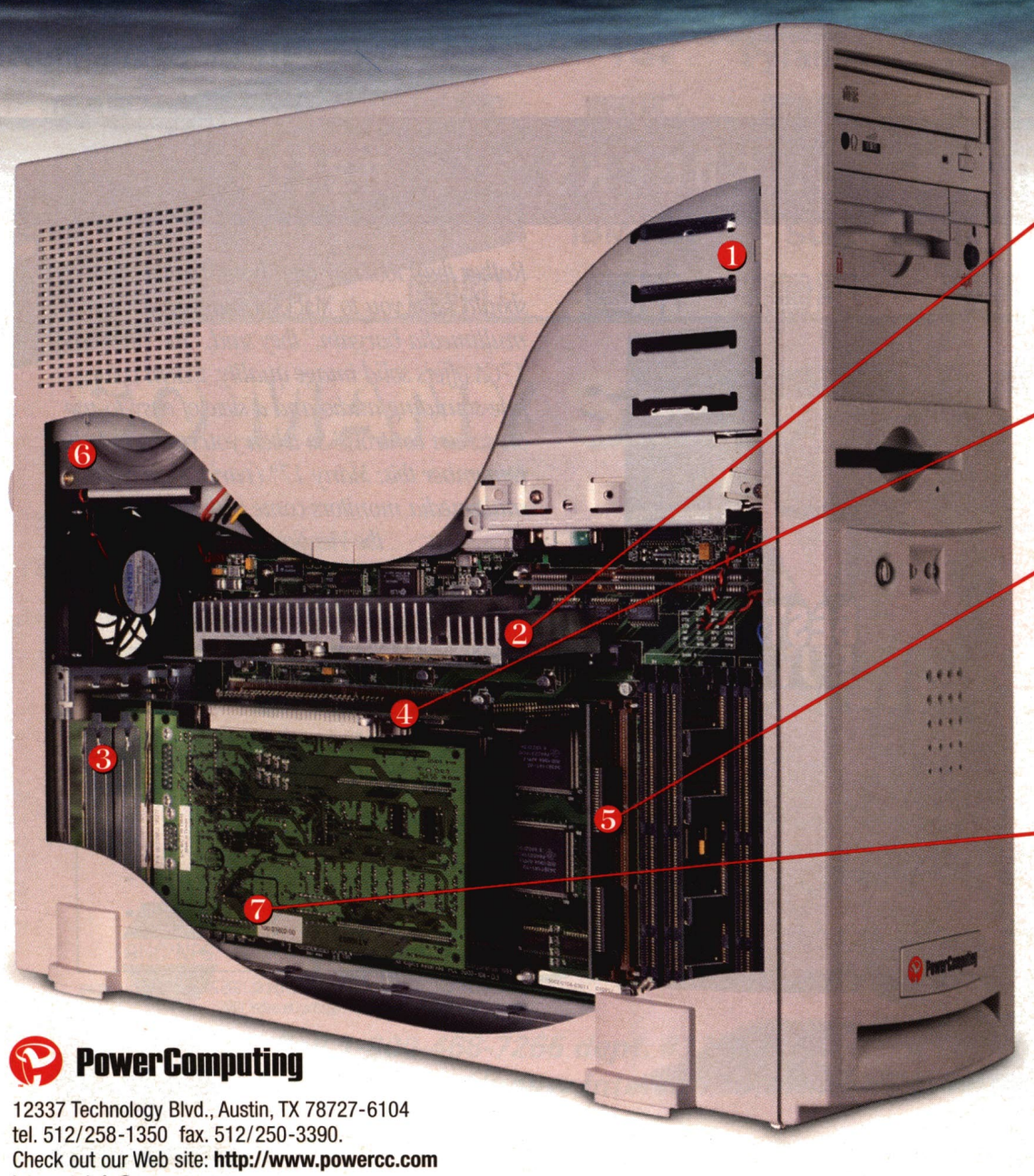
(800) 888-8583 Dept. (387) • (909) 869-7976 Fax: (909) 869-7958 • Call FaxSonic at (909) 869-7318 (24-hour fax-on-demand) • Request Doc. 150 • Internet: http://www.viewsonic.com • © 1996 ViewSonic Corporation. Corporate names and trademarks are the property of their respective companies.

Power Computing Introduces Fastest MacOS System Ever

150MHz PowerPC 604

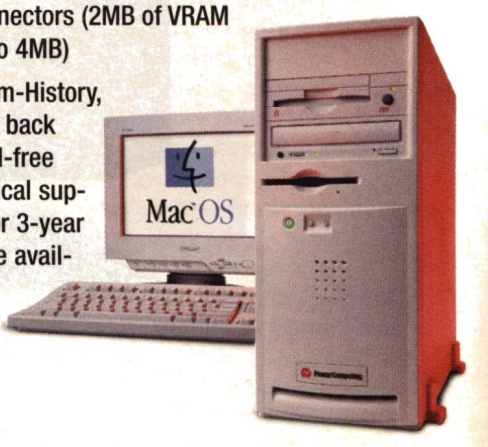
Fast PCI and NuBus Expansion

Accelerated 64-bit PCI Video and Fast SCSI



1. 3 Front Accessible Drives for optional Quad-Spin (4X) CD-ROM, Iomega Zip, Iomega Jaz, or SyQuest EZ-135
2. Easily upgradeable Plug & Play CPU daughtercards featuring the PowerPC 604 at 120, 132 and 150MHz
3. Fast PCI 3-slot expansion

   Need NuBus? Get both PCI and NuBus with Power Computing's STARGATE Choose either 3 PCI slots or 2 PCI and 2 NuBus slots - allows you to reconfigure at any time from NuBus to PCI
4. Eight DIMM slots for up to 512MB of RAM using 64-bit DIMMS with fast interleave memory; Socketable High Performance L2 DIMM Cache Slot allows for either 256K, 512K or 1MB
5. Internal Fast SCSI Bus (up to 10MBs/sec) and external SCSI Bus (up to 5MB/sec) as well as Internal Drive Bays for additional storage
6. Accelerated 64-bit PCI VRAM video graphics card with both Mac 15-pin and SVGA connectors (2MB of VRAM upgradeable to 4MB)
7. Love-Me-Or-I'm-History, 30 day money back guarantee. Toll-free lifetime technical support. 1, 2, or 3-year on-site service available, starting at only $49.



PowerComputing

12337 Technology Blvd., Austin, TX 78727-6104
tel. 512/258-1350 fax. 512/250-3390.
Check out our Web site: **http://www.powercc.com**
Internet: info@powercc.com

Apple, Macintosh and Mac are registered trademarks, and the Mac OS logo is a trademark of Apple Computer, Inc. PowerWave is a trademark of Power Computing Corporation. All other brand or product names are the property of their respective holders. Prices and specifications are valid in the US only and subject to change without notice.

Register to win a PowerWave! http://www.powercc.com

Blow Your Mind, Not Your Budget

POWERWAVE

MacWEEK - APRIL '95

MacUser ZD LABS
MacUser - AUG. '95

MACUSER EDITORS' CHOICE AWARD
1995 FINALIST

MW ★★★★
Macworld - AUG. '95

PC MAGAZINE LABS
PC Magazine - AUG. '95

TEST CENTER INFOWORLD HOT PICK
Infoworld - JUNE '95

Editor's Rave!

"Considering the purchase of a PowerMac?...We strongly recommend that you take a serious look at what Power Computing has to offer."
MacUser- Aug 95

"They might as well have come from Apple - the performance and compatibility are that good."
Macworld- Aug 95

"...an excellent Mac alternative, whether or not you are pinching your pennies."
PC Magazine- Aug 95

"Power Computing's systems match their PowerMac counterparts for speed and compatibility and are every bit as good as a dyed-in-the-wool Macintosh."
Infoworld- June 95

"A machine we love even more than the PowerMac 7500 - the PowerWave 604"
Macworld- Feb 96

MW EDITORS' CHOICE MW ★★★★

"The Power Computing PowerWave 604 is a very impressive Macintosh"
New York Times, November 7, 1995

PowerCurve 601/120 Starter
120 MHz PowerPC™ 601+

8MB RAM (256MB Max RAM)
Upgradeable CPU daughtercard
Optional Level 2 Cache (1MB Max)
850MB 11ms SCSI Hard Drive
3 Fast PCI Expansion Slots
Built-in Ethernet (10Base-T & AAUI)
Built-in Graphics w/1MB VRAM upgradeable to 4MB VRAM
Extended Keyboard & Mouse
Bundled Software

NEW! **$1899**

PowerWave 604/120 Starter
120MHz PowerPC™ 604

16MB RAM (512MB Max RAM)
Optional 256K, 512K, or 1MB Cache
1.0GB 11ms SCSI Hard Drive
Quad-Speed (4X) CD-ROM Drive
3 Fast PCI Expansion Slots
Built-in Ethernet (10Base-T & AAUI)
64-bit PCI Graphics w/2MB VRAM
Desktop Computer Case
Extended Keyboard & Mouse

$3199

PowerWave 604/120 Home Office
120MHz PowerPC™ 604

16MB RAM (512MB Max RAM)
Optional 256K, 512K, or 1MB Cache
1.0GB 11ms SCSI Hard Drive
14 inch .28 DP Monitor
Quad-Speed (4X) CD-ROM Drive
Internal Iomega Zip™ Drive
3 Fast PCI Expansion Slots
Built-in Ethernet (10Base-T & AAUI)
64-bit PCI Graphics w/2MB VRAM
Extended Keyboard & Mouse

$3599

OVER $1200 OF FREE SOFTWARE
*BUNDLED WITH EVERY SYSTEM

Mac OS 7.5.2
Insignia Soft Windows 2.0 60 day trial, Grolier's Multimedia Encyclopedia, Now Utilities, Now Up-to-Date, Now Contact, Intuit's Quicken, FWB HardDisk Toolkit PE, CD-ROM Toolkit, ClarisWorks, America Online, 250 Bitstream Fonts, Launch CD, US CD Atlas, World CD Atlas, The Animals CD-ROM, Nisus Writer

FREE

PowerWave 604/132 Hot Pick
132 MHz PowerPC™ 604

16MB RAM (512MB Max RAM)
256K Level 2 Cache (1MB Max)
1.0GB 11ms SCSI Hard Drive
Quad-Speed (4X) CD-ROM Drive
3 Fast PCI Expansion Slots
Built-in Ethernet (10Base-T & AAUI)
64-bit PCI Graphics w/2MB VRAM
Extended Keyboard & Mouse

$3699

PowerWave 604/132 MultiMedia
132 MHz PowerPC™ 604

24MB RAM (512MB Max RAM)
256K Level 2 Cache (1MB Max)
1.0GB 11ms SCSI Hard Drive
14 inch .28 DP Monitor
Quad-Speed (4X) CD-ROM Drive
3 Fast PCI Expansion Slots
Built-in Ethernet (10Base-T & AAUI)
64-bit PCI Graphics w/2MB VRAM
Tower Configuration
Extended Keyboard & Mouse

$4299

PowerWave 604/150 Hot Pick
150 MHz PowerPC™ 604

16MB RAM (512MB Max RAM)
512K Level 2 Cache (1MB Max)
1.0GB 11ms SCSI Hard Drive
14 inch .28 DP Monitor
Quad-Speed (4X) CD-ROM Drive
3 Fast PCI Expansion Slots
Built-in Ethernet (10Base-T & AAUI)
64-bit PCI Graphics w/2MB VRAM
Tower Configuration
Extended Keyboard & Mouse

$4799

PowerWave 604/150 XL
150MHz PowerPC™ 604

32MB RAM (512MB Max RAM)
512K Level 2 Cache (1MB Max)
1.0GB 11ms SCSI Hard Drive
15 inch Sony Monitor
Quad-Speed (4X) CD-ROM Drive
Internal Iomega Zip™ Drive
3 Fast PCI Expansion Slots
Built-in Ethernet (10Base-T & AAUI)
64-bit PCI Graphics w/4MB VRAM
Extended Keyboard & Mouse

$5899

Service & Support

30 day money back,
Love-Me-Or-I'm-History guarantee.
Toll-free lifetime technical support.
1, 2, or 3-year on-site service available, starting at $49.

Go Configure!

Since Power Computing is the manufacturer, you can customize your RAM, hard drive, video and monitor options – just call.

ORDER DIRECT AND SAVE
1-800-404-7693

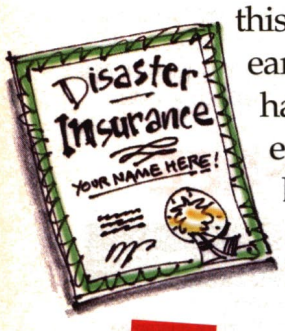
PowerComputing™
MORE POWER TO YOU.™

How to make a full recovery when disaster strikes.

Disasters don't play favorites. It doesn't matter if you're a huge corporation. Or a one-man band. The result is the same: without Retrospect®, your files can be completely wiped out in a second.

1. *How to get disaster insurance for your data.*

Data loss will happen to half of us this year: meteors, fire, theft, earthquakes, power surges, hard disk failure, human error—it goes on and on. But with Retrospect and a solid backup strategy, nothing can harm your data.



2. *Before you back up.*

Figure out what you want to back up to: removable cartridges or a dedicated backup drive. For lots of files you want a device with the capacity for unattended operation—say DAT, DLT, or an autoloader.

3. *How to back up if you're a small company.*

Retrospect will show you the best way. The EasyScript™ feature sets up a backup strategy from your answers to a few simple questions, then carries it out automatically to whatever media you select.

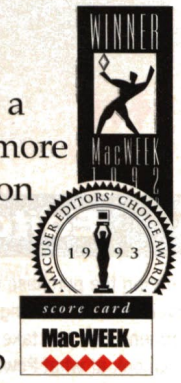
4. *How to back up if you're a big company.*

The answer is Retrospect Remote®, our network backup product. Use a set schedule or the more flexible Backup Server™ which automatically backs up Macs with the oldest backup first—ideal for PowerBooks that appear and disappear off the network. The bottom line: Retrospect Remote covers your network like a blanket.

5. *How to laugh in the face of danger.*

We're not suggesting standing on the top of the building during a lightning storm. But when disaster strikes, Retrospect can restore whatever you're missing—files from your latest backup, older files, or the entire hard drive.

Take the next step. There has to be a reason why more people rely on Retrospect than all the rest combined. Why it consistently earns the top scores, the best reviews. We have the answers. Call us at 800-982-9981 for our *Understanding Backup* white paper. It would be a disaster not to.



dantz® *To go forward, you must backup.®*

©1996 Retrospect and Retrospect Remote are registered trademarks of Dantz Development Corporation. All other trademarks are property of their respective holders. Dantz Development Corporation. 4 Orinda Way, Building C, Orinda, CA 94563. Phone: 510.253.3000. Fax: 510.253.9099. Internet: info@dantz.com, upgrades@dantz.com, www.dantz.com.

VISUAL INFO

A list of Photoshop functions boosted by Sun's UltraSPARC are at http://www.zdnet.com/~macweek/1008/vis.html.

The fastest box for Photoshop — who's got it?

ED CALDWELL

By Bruce Fraser

The fastest Mac clone vs. the baddest Windows NT and Unix machines.

The quest for the ultimate Adobe Photoshop machine may be a never-ending journey, but it's always an interesting one. We evaluated three very different, very bleeding-edge machines to find the ultimate in image-editing speed.

We compared the fastest Macintosh compatible — DayStar Digital Inc.'s four-processor 150-MHz PowerPC 604-based Genesis MP 600 — against the biggest, baddest Windows NT and Unix machines we could find. Those turned out to be the soon-to-be-released TD-400 from Intergraph Corp. running dual 200-MHz Pentium Pro CPUs under Windows NT and Sun Microsystems Inc.'s Ultra1 Creator 3D with a single 167-MHz UltraSPARC chip and Solaris 2.5. All were loaded with enough RAM to work happily on 50-Mbyte files without hitting the scratch disks. (For details on our sky's-the-limit configurations, see story, next page).

Photoshop is one of those rare applications that spawns an entire industry. It's also one of the exceedingly rare ones to be programmed using the MacApp development environment, which may explain why it has always seemed most at home on the Mac. In previous shootouts, the Mac has always come out on top, but this time, the results are much less conclusive. We constructed an exhaustive benchmark suite comprising some 30 tests that stressed different facets of Photoshop operation, and then we tested the cross-platform trio side-by-side-by-side.

No clear winner emerged. Though a subset of the benchmarks could be chosen to make any of the three machines seem the Photoshop performance champ, the real picture is a lot more complex. We can say confidently that raw speed is not a reason for Photoshop users to abandon the Mac — yet. But the overall results show that the speed advantages of other platforms have to be taken seriously, and some of the tests clearly show that the Mac OS is getting long in the tooth.

Ultra manipulation

Sun's Ultra1, introduced in November, quickly emerged as the platform to beat for Photoshop speed. However, it takes a very different approach to accelerating Photoshop than do the other two systems. The UltraSPARC CPU contains the visual instruction set (VIS), which is a group of graphics routines accessed by a Photoshop plug-in written by Sun. The VIS plug-in software uses the application's bottleneck architecture to accelerate some, but by no means all, Photoshop functions. In this regard, the Ultra1 behaved rather like a Mac with a very good digital signal processor accelerator; the functions for which the plug-in is optimized were very fast, while those operations that weren't optimized ran much slower. In contrast, the DayStar-written multiprocessing plug-in for the Genesis accelerates many more Photoshop operations, though with less dramatic effect.

As it happens, many of the commands that employ the VIS plug-in are typical benchmark operations such as Unsharp Mask, Gaussian Blur, rotate and resize. On our original set of tests, the UltraSPARC blew the doors off the other two machines, but we noticed three operations — the Despeckle filter, a large-radius Gaussian Blur and a mode change from RGB to CMYK — where Sun's performance was considerably less impressive.

We investigated further with tests that looked at slightly less obvious operations, such as RGB-to-Lab and Lab-to-RGB mode changes, and we ran filters such as Unsharp Mask and Dust & Scratches in Lab mode. Our timings quickly demonstrated that the single-processor Ultra1 was often outclassed by the multiprocessor machines in the operations not targeted by Sun's plug-in. It's important to keep this in mind when you interpret the benchmark results.

Setup hassles

There's wisdom in knowing your limits: Before we started testing, we had engineers from Adobe Systems Inc. configure the Sun and Intergraph machines. MacWEEK tweaked the Mac configuration provided by DayStar.

The Ultra1 took a considerable amount of work to set up. At Adobe's request, we ended up running a pre-release copy of Photoshop 3.0.1 for Unix under the Common Desktop Environment windowing system. According to Adobe, Photoshop 3.0.1 runs at the same speed as the current Version 3.0, but it includes some bug fixes for the user interface that allow for more accurate benchmark timing. Nonetheless, we ran into a time-wasting glitch where Photoshop dialog boxes were filled with black, making the text unreadable. Having a Unix expert switch the entire windowing environment to 24-bit color fixed the bug.

The Genesis and the Intergraph machines were essentially plug-and-play.

We took pains to ensure that Photoshop had the same RAM complement on each machine, which wasn't a trivial task because of the very different methods of RAM allocation on the three platforms. According to Adobe engineers, the number that needs to be kept constant across platforms is the amount of scratch space reported by Photoshop in the lower left corner of an image window. We made sure that Photoshop had between 174.5 and 175 Mbytes of scratch space on all three machines. All the tests were carried out using a 50-Mbyte RGB file and its

See Shootout, next page

Shootout

From previous page

CMYK equivalent. The resulting benchmark numbers are averages of at least three trials for every test.

Test matrix

All our tests except two are tasks that Photoshop performs entirely in RAM, without hitting the scratch disk at all, so the results derive from the machines' processors and memory architectures and the application's algorithms.

We looked first at three rotate operations: 90-degree, 45-degree and 0.3-degree. The 90-degree rotate involves no computation. It's simply a matter of moving a lot of data, and the results show that the Mac's greatest weakness for this kind of work was the relatively slow rate at which it fed data from memory to the processors. The Intergraph, which boasts four-way memory interleaving against DayStar's two-way, was almost twice as fast, and by using VIS commands cleverly, the Ultra1 was nearly four times faster than the Mac. The absolute difference in elapsed time was relatively trivial on 90-degree rotates — a matter of a few seconds — and would have little impact on productivity, but it shows where the Mac's weakness lies.

The 45-degree and 0.3-degree rotates also move copious quantities of data, but they involve a lot of computation, too. We saw the same relationship between the three machines on the 0.3-degree rotate as we did on the 90-degree rotate, and the timing gap widened even further on the 45-degree rotate.

Interestingly, when we converted the same image to CMYK color space and rotated it 45 degrees the gap narrowed considerably, although the Genesis still lagged behind the other machines. The difference between the Genesis results for the 45-degree rotates in RGB and CMYK can be accounted for entirely by the fact that the CMYK file contained an extra color channel and thus one-third more data than the RGB file. However, the non-Macs took more than twice as long to accomplish the 45-degree CMYK rotate as they took to spin the RGB image. That might make the Intergraph and Sun less attractive to users who deal primarily with CMYK scans from drum scanners.

When resizing the image by 50 percent, the Ultra1 once again took the lead, but the Genesis was faster than the Windows NT-based Intergraph machine. The first test where the Sun sank was feathering a selection with a 50-pixel radius, where the Unix workstation proved considerably slower than either competitor. This pattern repeated itself on large-radius Gaussian Blurs in both RGB and CMYK modes. Clearly these tasks weren't among the ones that Sun accelerated.

Feathering selections is an everyday operation — it's necessary anytime you want a soft-edged selection — while large-radius Gaussian Blurs are somewhat less common. However, high-resolution work with large files is likely to require large-radius blurs, and this is exactly the type of work that drives users to buy extreme machines.

On filters such as Unsharp Mask and Gaussian Blur, Photoshop uses three algorithms: one for radii of two pixels or less, one for intermediate-radius settings and one for large-radius work. The Genesis was by far the fastest machine on large-radius Gaussian Blurs and outperformed Intergraph's Pentium Pro machine on small-radius blurs and sharpens by almost 3-to-1. The Intergraph beat the Genesis on the intermediate-radius sharpens and blurs. The Ultra1 was extremely fast at

The cross-platform equipment list

We asked DayStar Digital Inc., Intergraph Corp. and Sun Microsystems Inc. to provide best-of-breed systems for our Adobe Photoshop shootout. For this benchmark marathon, we told them, price was no object. Here are the details on the fastest machines these companies could build:

- **DayStar Genesis MP 600: Four 150-MHz PowerPC CPUs, 196 Mbytes of RAM for main memory, 512-Kbyte Level 2 cache, ATI XClaim GA graphics card, two 2-Gbyte Quantum Atlas hard disks striped across an ATTO ExpressPCI-M Fast-and-Wide SCSI-2 accelerator board, a 1-Gbyte Fast SCSI-2 Quantum Atlas start-up disk, built-in CD-ROM drive, System 7.5.2, built-in Ethernet, keyboard and mouse.**

  Base price: $28,155, not including a 21-inch monitor.

- **Intergraph TD-400: Two 200-MHz Pentium Pro CPUs, 256 Mbytes of system RAM, built-in G95 graphics chip set (based on the Matrox Millennium card) with 8 Mbytes of video RAM, one 2-Gbyte Conner disk drive, CD-ROM drive, Windows NT, built-in Ethernet, keyboard and mouse.**

  Base price: $25,885, including a high-end Intergraph-labeled 21-inch monitor.

  Note that Intergraph's basic CPU warranty is three years, and the first year covers on-site, next-day service.

- **Sun Ultra1 Creator 3D: One 167-MHz UltraSPARC CPU, 385 Mbytes of RAM, Creator 3D accelerated graphics subsystem, two 2-Gbyte Seagate Barracuda Fast and Wide SCSI-2 hard disks, Solaris 2.5, built-in Fast Ethernet, keyboard and mouse.**

  Base price: $46,095 including Sun 20-inch monitor.

Sun noted that all our tests could have been run in a mere 256 Mbytes of RAM, which would have cut the price to $38,295. Sun also said that the non-3D Creator models, which have less VRAM, should have performed equally well for all compute-intensive tasks in Photoshop, but none were available for this shootout.

— By Stephen Howard

MACWEEK REAL WORLD LABS

Photoshop functions

DayStar's Genesis MP 600 opened the test file faster than the other machines. It lagged in the other operations, but the absolute time differential was small.

Load 50-Mbyte Photoshop file

Open file	Shorter is better	Seconds
Intergraph TD-400		10.0
Sun Ultra1 Creator 3D		11.5
DayStar Genesis MP 600		9.4

Open Levels dialog box, calculate histogram

Open Levels	Shorter is better	Seconds
Intergraph TD-400		2.2
Sun Ultra1 Creator 3D		2.9
DayStar Genesis MP 600		3.5

Change Levels black point to 20, gamma to 1.8

Apply Levels change	Shorter is better	Seconds
Intergraph TD-400		2.6
Sun Ultra1 Creator 3D		1.6
DayStar Genesis MP 600		3.4

Load selection from alpha channel

Load selection	Shorter is better	Seconds
Intergraph TD-400		0.9
Sun Ultra1 Creator 3D		0.9
DayStar Genesis MP 600		1.3

MACWEEK REAL WORLD LABS

Unsharp Mask

Unsharp Mask, required by almost every image, uses three different algorithms for small, medium and large radius settings.

Sharpen RGB image with 1-pixel radius

RGB Unsharp Mask	Shorter is better	Seconds
Intergraph TD-400		40.1
Sun Ultra1 Creator 3D		8.6
DayStar Genesis MP 600		15.0

Sharpen CMYK image with 1-pixel radius

CMYK Unsharp Mask	Shorter is better	Seconds
Intergraph TD-400		53.1
Sun Ultra1 Creator 3D		11.5
DayStar Genesis MP 600		22.5

Sharpen RGB image with 2.3-pixel radius

RGB Unsharp Mask	Shorter is better	Seconds
Intergraph TD-400		20.1
Sun Ultra1 Creator 3D		13.8
DayStar Genesis MP 600		26.6

Sharpen CMYK image with 2.3-pixel radius

CMYK Unsharp Mask	Shorter is better	Seconds
Intergraph TD-400		26.7
Sun Ultra1 Creator 3D		18.1
DayStar Genesis MP 600		35.9

Sharpen Lightness channel of Lab image with 8.7-pixel radius

Lab Unsharp Mask	Shorter is better	Seconds
Intergraph TD-400		7.8
Sun Ultra1 Creator 3D		15.8
DayStar Genesis MP 600		8.5

small- and intermediate-radius sharpens and blurs on RGB files, somewhat less so on CMYK files, and much slower than the other machines when working in Lab color space.

We also looked at some more-obscure filters, such as Despeckle and Dust & Scratches. We saw again that a single UltraSPARC processor isn't particularly fast on nonoptimized operations. The four-CPU Genesis was much speedier than the dual-processor Intergraph on Despeckle and slightly faster on Dust & Scratches.

The Genesis was the clear winner on mode changes, irrespective of the color spaces involved. The Ultra1 was slightly faster than the Intergraph going from RGB to Lab but proved extraordinarily slow going from Lab to RGB. This will be a major problem for any user who acquires Photo CD images into Lab for editing, then transforms them back to RGB for output to film recorders.

The disk subsystems came into play on only two tests. The Genesis' 4-Gbyte striped array and Fast and Wide SCSI-2 accelerator card was slightly faster than the two nonstriped machines at opening the large test file. The only other time the disk came into play was when we duplicated the background layer and set the apply mode to Screen. Here the influence of disk speed was minimal. The Genesis was slightly slower than its competitors, though the difference between fastest and slowest was slightly more than two seconds (out of 12).

Our final set of tests looked at how well the machines scored in scrolling: We zoomed the 5,125-by-3,413-pixel image to 1:1, then scrolled from left to right and from top to bottom. The Ultra1 was much slower than the other two machines. We wouldn't read too much into this; we suspect that the only time people make heavy use of the arrows on the ends of Photoshop's scroll bars is when they benchmark graphics cards and CPUs. When scrolling with the Grabber Hand tool, panning and zooming, or redrawing the entire screen, the Ultra1 was extremely speedy.

> It's clear that the three machines have quite different strengths and weaknesses in various areas of Photoshop speed.

Which one is fastest?

Interpretation of test results is something on which people of good faith can disagree, and any blanket performance statement should be taken with a grain of salt. In evaluating the suitability of any of these machines for your work you must think long and hard about how you use Photoshop and which operations are bottlenecks in your work flow. It's clear, though, that the three machines have quite different strengths and weaknesses in various areas of Photoshop speed.

The Ultra1 is the most difficult of the three to characterize because its performance was all over the map. On most operations where VIS acceleration is implemented, it was by far the fastest of the three systems tested. But even the accelerated color-space conversions were slower than those on the Genesis, and the Lab-to-RGB conversion was comparable to a lowly Power Mac 8100/100. The Genesis and the Intergraph were basically on par with one another — the Intergraph TD-400 was faster on rotates, while the Genesis was faster on resizing, most filters and mode changes.

The Ultra1 will be a very useful machine for straightforward production situations where you need to open an image, rotate it, do simple tone and color correction with Levels or Curves, apply sharpening, and save the file. However, doing anything in Lab mode is slow. The Ultra1 also falls down on large-radius blurs and sharpens, which are likely to come into play if you work at film-recorder resolutions on very large files. If you do creative work that relies heavily on filters, the UltraSPARC box probably isn't a good bet — many of Photoshop's built-in filters aren't accelerated by VIS, and filters from third-party developers that are popular on the Mac simply aren't available for Sun's platform.

Sun pointed out, however, that future versions of the VIS plug-in could accelerate more Photoshop tasks, and the Ultra2 with dual 200-MHz CPUs will be coming out in May. That multiprocessor UltraSPARC

See Shootout, next page

MacWEEK Real World Labs

Blending

Both of these tests involve recalculating each pixel from two source pixels, then displaying the result.

Calculate Screen channel from red and green

Calculate channel	Shorter is better	Seconds
Intergraph TD-400		2.9
Sun Ultra1 Creator 3D		1.9
DayStar Genesis MP 600		3.3

Duplicate background layer and set apply mode to Screen

Change apply mode	Shorter is better	Seconds
Intergraph TD-400		4.8
Sun Ultra1 Creator 3D		3.6
DayStar Genesis MP 600		5.8

MacWEEK Real World Labs

Feathering and Gaussian Blur

These operations are essential for making soft-edged selections. Like Unsharp Mask, they use one of three different algorithms depending on radius setting.

Blur RGB image with 1-pixel radius

RGB Gaussian Blur	Shorter is better	Seconds
Intergraph TD-400		35.0
Sun Ultra1 Creator 3D		4.5
DayStar Genesis MP 600		10.4

Blur RGB image with 2.3-pixel radius

RGB Gaussian Blur	Shorter is better	Seconds
Intergraph TD-400		15.4
Sun Ultra1 Creator 3D		10.0
DayStar Genesis MP 600		23.7

Blur RGB image with 100-pixel radius

RGB Gaussian Blur	Shorter is better	Seconds
Intergraph TD-400		69.9
Sun Ultra1 Creator 3D		60.7
DayStar Genesis MP 600		39.5

Blur CMYK with 75-pixel radius

CMYK Gaussian Blur	Shorter is better	Seconds
Intergraph TD-400		82.3
Sun Ultra1 Creator 3D		90.8
DayStar Genesis MP 600		45.6

Feather complex selection with 50-pixel radius

Feather	Shorter is better	Seconds
Intergraph TD-400		8.9
Sun Ultra1 Creator 3D		13.6
DayStar Genesis MP 600		9.9

MacWEEK Real World Labs

Rotate and Resize

Speed on 90-degree rotations is entirely a function of how fast these machines can move data in memory. The other tests involve considerable computation.

Rotate RGB image 90 degrees

Rotate 90 degrees	Shorter is better	Seconds
Intergraph TD-400		2.7
Sun Ultra1 Creator 3D		1.4
DayStar Genesis MP 600		5.2

Arbitrary rotate RGB image 45 degrees

Rotate 45 degrees	Shorter is better	Seconds
Intergraph TD-400		30.0
Sun Ultra1 Creator 3D		15.5
DayStar Genesis MP 600		82.3

Arbitrary rotate CMYK image 45 degrees

Rotate 45 degrees	Shorter is better	Seconds
Intergraph TD-400		88.5
Sun Ultra1 Creator 3D		40.4
DayStar Genesis MP 600		110.9

Arbitrary rotate RGB image 0.3 degrees

Rotate 0.3 degrees	Shorter is better	Seconds
Intergraph TD-400		23.6
Sun Ultra1 Creator 3D		13.2
DayStar Genesis MP 600		55.5

Shootout

From previous page

workstation will start at $57,000, however, with a minimum of 256 Mbytes of RAM.

Choosing between the Genesis and the Intergraph on speed is a little trickier. The Intergraph proved slightly more responsive than the Genesis on simple operations, such as using Levels or Curves, but the difference was trivial — a second or so on a 50-Mbyte file. On more time-consuming operations, each showed distinctive strengths and weaknesses. The Intergraph handled rotation and medium-radius sharpen or blur filters better than the Genesis, while DayStar's machine was much faster on small-radius and large-radius filters and slightly faster when changing modes, feathering selections and running filters such as Despeckle. Looking at these two, it's almost impossible to make a case for switching platforms based on speed, but you're not sharply penalized regardless of which machine you use.

Mode change

Color-space conversion — a mode change — is a common computationally intensive Photoshop operation.

Switching between color spaces

RGB to CMYK

	Shorter is better	Seconds
Intergraph TD-400		12.6
Sun Ultra1 Creator 3D		13.9
DayStar Genesis MP 600		10.9

RGB to Lab

	Shorter is better	Seconds
Intergraph TD-400		5.7
Sun Ultra1 Creator 3D		4.5
DayStar Genesis MP 600		3.7

Lab to RGB

	Shorter is better	Seconds
Intergraph TD-400		6.0
Sun Ultra1 Creator 3D		26.4
DayStar Genesis MP 600		4.3

Other considerations

Speed is important, but it isn't the sole differentiating factor. Although we did experience some weirdness with the Sun system, which required a cold restart to fix, Solaris is an extremely robust operating system. No matter what kind of windowing shell you use, however, you need ready access to a Unix guru if you want to rely on Sun's box to earn your daily bread.

Moreover, the RAM requirements for the Unix system are much higher than for Windows NT or the Mac OS. Though the Ultra1 we tested had 384 Mbytes of RAM installed, we could have gotten away with only 256 Mbytes to work with a 50-Mbyte file. In comparison, the Mac OS had the smallest memory footprint, which meant that we had to install about 50 Mbytes less RAM in the Genesis to get our preferred memory allocation for Photoshop.

The application's user interface was remarkably consistent across all three platforms, with a couple of notable exceptions. Running under the Common Desktop Environment on the Ultra1, virtually all of Photoshop's windows are nonmodal. In the case of filters, such as Unsharp Mask and Gaussian Blur, this proved to be a bad design: When you click the mouse in the image window to load a desired part of the image into the filter's proxy, the image window comes to the front, hiding the filter. You have to move the image window out of the way to retrieve the filter window.

A bigger shock for those of us used to Photoshop on the Mac was that neither of the other two systems supported videoLUT animation. Hence, you can't get real-time feedback as you adjust Levels and Curves, and the clipping display in Levels isn't available.

For Unix, this is a fundamental limitation of the X Window System — there's no API to let the application control the videoLUT. Under Windows NT, it's possible that some combinations of graphics cards and drivers will allow videoLUT animation, but the built-in graphics chip set of the IntergraphTD-400 isn't among them.

Accurate, hardware-based monitor calibration also isn't available for Windows NT and is extremely expensive for the UltraSPARC line. Color-management systems, which are nearly mature technologies on the Mac, are virtually unknown on the other platforms.

The bottom line

When we last did a cross-platform shootout, we were able to report unequivocally that the Mac was the fastest for running Photoshop. We can no longer make that claim. For a few types of Photoshop work, it is still the speed champ, and for those who want to work visually rather than by the numbers, it still has very clear advantages, but the challenges it's facing are stronger than ever before.

DayStar Digital Inc. of Flowery Branch, Ga., can be reached at (770) 967-2077 or (800) 972-8711; fax (770) 967-3018; http://www.daystar.com.

Intergraph Corp.'s Computer Systems Division of Huntsville, Ala., can be reached at (205) 730-5441 or (800) 763-0242; fax (205) 730-6188; hhpolsko@ingr.com; http://www.intergraph.com/ics.

Sun Microsystems Inc. of Mountain View, Calif., can be reached at (415) 960-1300 or (800) 821-4643; fax (415) 969-9131; http://www.sun.com. □

Other filters

The two relatively obscure filters tested here are rarely subjects for special optimization and, hence, provide a good picture of baseline filter performance.

Dust & Scratches filter on one channel in Lab mode

Dust & Scratches	Shorter is better	Seconds
Intergraph TD-400		12.2
Sun Ultra1 Creator 3D		33.7
DayStar Genesis MP 600		12.0

Despeckle RGB image

Despeckle	Shorter is better	Seconds
Intergraph TD-400		25.0
Sun Ultra1 Creator 3D		37.2
DayStar Genesis MP 600		15.6

Scrolling

We tested scrolling the height and width of the entire image at a zoom ratio of 1:1. This is entirely a test of the graphics subsystem.

Horizontal scrolling

	RGB scroll: Shorter is better	RGB scroll: Seconds	CMYK scroll: Shorter is better	CMYK scroll: Seconds
Intergraph TD-400		16.6		16.5
Sun Ultra1 Creator 3D		43.5		44.1
DayStar Genesis MP 600		16.6		16.5

Vertical scrolling

	RGB scroll: Shorter is better	RGB scroll: Seconds	CMYK scroll: Shorter is better	CMYK scroll: Seconds
Intergraph TD-400		11.0		11.0
Sun Ultra1 Creator 3D		14.0		14.0
DayStar Genesis MP 600		11.0		11.0

When you need information that is buried in thousands of pages of text, you need one of our retrievers. For the past ten years lawyers, researchers, and corporations have been using Sonar™ products for Mac-based text retrieval.

Sonar Image® has "vision" because it controls scanning, OCRs documents into text and then gives you powerful search and analysis tools. Search using synonyms, phonetic sound-alikes, proximity, relevancy, Booleans and more — all at speeds exceeding 12,500 pages/second. Sonar Image also retains a hi-resolution replica which can be printed so nothing is sacrificed.

Two of our programs are also available for Windows™ and all are compatible with each other, so an enterprise-wide system of document retrieval can be built easily. Call or fax for a brochure explaining all the many features and options. In addition to Sonar Image our other products include:

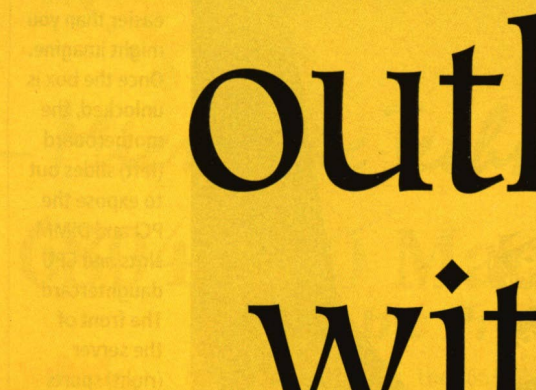
- ▶Sonar Image Personal Edition
- ▶Sonar Image Discovery Edition
- ▶Sonar Professional™ for Mac & Windows
- ▶Sonar for Mac™ & Windows

804-739-3200
FAX (804) 739-8376
Download a working demo at http://www.cris.com/~vasys

VIRGINIA SYSTEMS
5509 West Bay Court
Midlothian, VA 23112

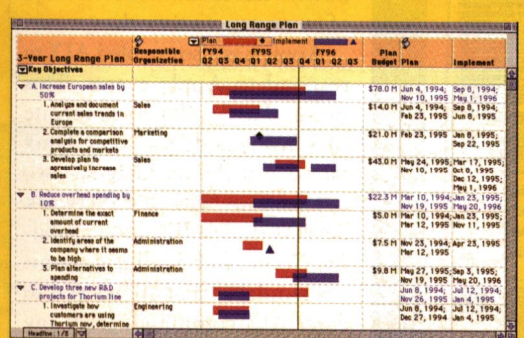
Sonar Image is a Registered Trademark. Sonar is a Trademark. All other trademarks acknowledged.

The outliner with a different point of view.

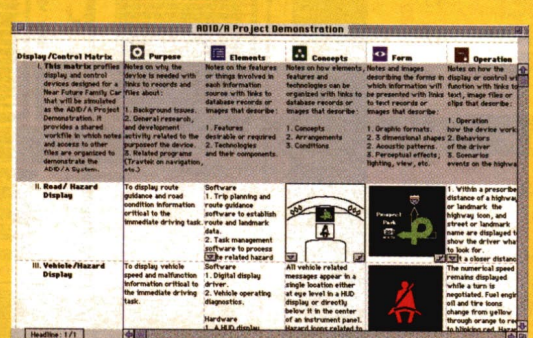


"Its versatile tables are unmatched by any Mac information manager," *MacWeek*, September 12, 1994

"If you need to coordinate lots of diverse information, there's nothing else like it," *MacUser*, February 1995



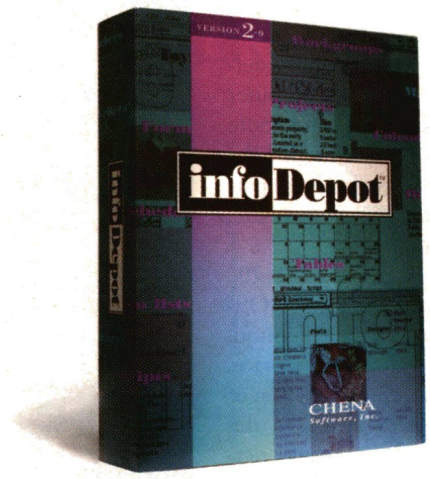
Customize outline based-timelines with all of the details!



Expect the unexpected: InfoDepot is nothing like the outliner buried in your word processor.

(Actually, lots of different points of view.)

Look at it this way. You have projects to get done, people to schedule, costs to assemble, details to watch, plans to make, notes to incorporate, tasks to complete, deadlines to meet, changes to make, and how are you going to get it all done?



With InfoDepot.

Outline-based solutions from your point of view.

InfoDepot gives you the power to assemble and coordinate all kinds of information so that you can keep on top of it, and get your projects done.

Best of all, its outliner lets you see any and every detail, from any number of different views. That's because InfoDepot offers outline-based solutions to everything, from basic outlines to sophisticated tables and colorful timelines.

Accelerated for Power Macintosh

MacUser

"♦♦♦♦" MacWeek 9.12.94

Tables let you add a wealth of detail to your outline, in any number of columns. Plus, you can add pictures, movies or sound in any cell.

Timelines let you see date information in an easy-to-follow format. Forms let you design your own custom layout.

Without the constraints of typical outliners.

With InfoDepot, you can collect dates, numbers, text, pictures, video, and sound. Build formulas, perform sorts and searches. Add AppleScript™ support, multi-user capabilities, and drag-and-drop to other documents and applications. No other outliner does as much or does it better.

InfoDepot comes with a money-back guarantee, so there's no risk. Try it. When it comes to getting it done, you've never seen anything like it.

infoDepot™

What it takes to get it done.

Chena™ SOFTWARE, INC.

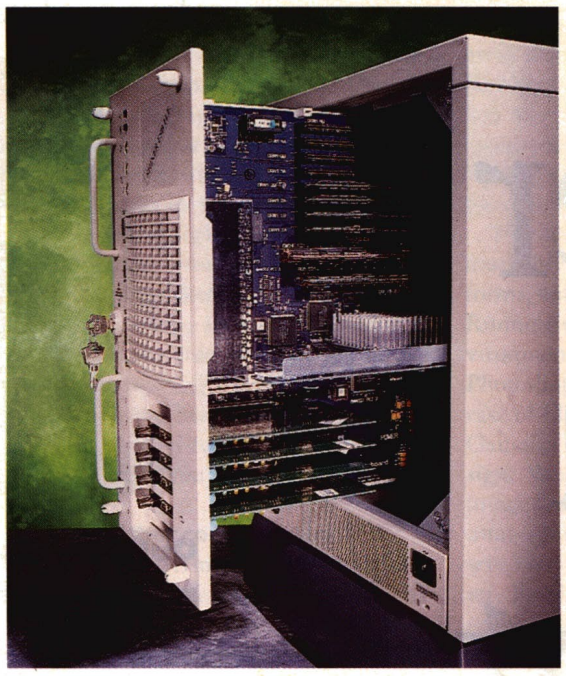
For more information and a free demo version of InfoDepot, visit our Web site: http://www.chena.com or call 800-245-4577 or 610-770-1210.

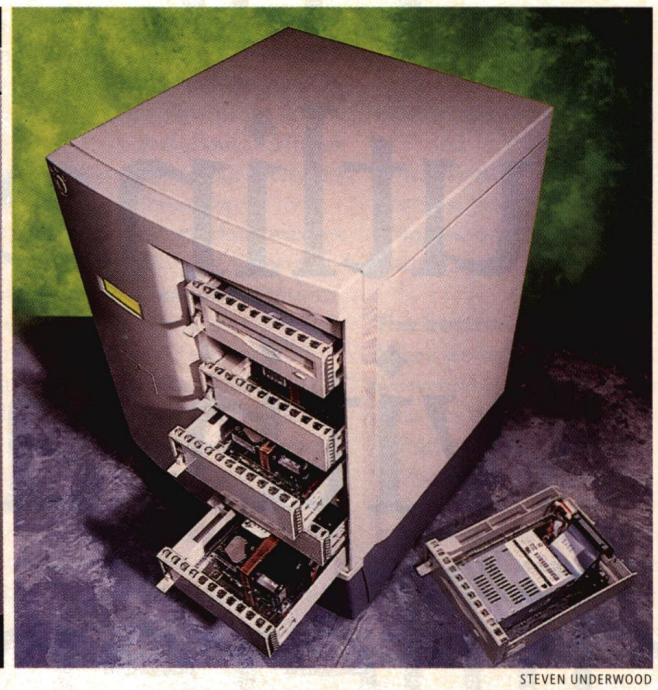
Shiner

From Page 1

we were impressed. We found this high-end box easier to configure than comparable network servers from Compaq Computer Corp. or Hewlett-Packard Co. and more flexible than any Unix pizza box. Indeed, the physical design of the Network Server pair proves Apple can apply its ease-of-use smarts to more than just software.

In file-server benchmarks, the NS 700 tripled the performance of a Mac OS-based Workgroup Server 9510. We found, however, that such power bears a price. The software setup and administration of these servers is considerably more demanding than any previous Apple network machine. Apple said it's aiming these new models only at sites with Unix expertise in-house — that's good. Both models are expected to ship at the end of March at $10,000 to $15,000 for the NS 500 and $12,500 to $25,000 for the NS 700.





STEVEN UNDERWOOD

Turning a Shiner server inside-out is easier than you might imagine. Once the box is unlocked, the motherboard (left) slides out to expose the PCI and DIMM slots and CPU daughtercard. The front of the server (right) sports seven storage bays with greased skids and special drawers for easy access.

First-class hardware

When they ship, the Network Servers will let Apple's LAN hardware compete with offerings from premier Intel-standard server vendors. The NS 700 cabinet is thoughtfully designed, with hot-swappable, front-accessible storage bays; a slide-out motherboard that offers access to PCI card slots and memory in less than one minute; and load-sharing, hot-swappable, 425-watt power supplies. And yes, the unit can be mounted in a standard 19-inch rack, even if it's not designed exclusively for such use.

What you'll find inside the cabinet is just as impressive. A 132-MHz PowerPC 604 powers the NS 500; the NS 700 sports Apple's fastest processor, a 150-MHz 604. The NS 500 has 512 Kbytes of Level 2 cache and a base 32 Mbytes of RAM, expandable to 512 Mbytes. The NS 700 uses a 1-Mbyte cache and comes with a base 48 Mbytes of RAM, also expandable to 512 Mbytes. The processor comes on a large daughtercard, which slides easily into the motherboard; future upgrades to faster processors should take less than five minutes.

Two Fast and Wide SCSI-2 channels service the internal storage bays: seven in the front and two extra rear bays in the NS 700. A third channel, running old-fashioned SCSI, is available for connecting external devices. Both servers have built-in CD-ROM drives for software installation. Apple will offer an optional hardware RAID controller of its own design for those demanding maximum reliability and performance. This PCI card was not available in time for our tests.

Physically configuring storage on the Network Servers is quite literally a snap. Drives and other devices are mounted in sliding drawers, with adapters that provide the interfaces for power and data into the server's storage-system backplane. Drawers and adapters will be available from Apple, so customers will be able to add drive mechanisms of their choice to a server array. Apple will also sell certified drives in several capacities. Full-height devices, such as DAT autoloaders, are also supported, although they'll take up two storage bays and require that your vendor provide a custom drawer.

The Network Servers use the PCI bus for expansion. Unlike the latest Power Macs, however, the servers have a dual-channel implementation. One channel carries the fundamental components, such as disk and built-in VGA graphics, and the second PCI channel is available for the six expansion slots. Apple will offer 10-Mbps and 100-Mbps Ethernet cards to supplement the single built-in Ethernet port. One area of concern, however: You won't be able to slap a PCI card into a Network Server unless the third-party vendor provides a driver that works with the AIX operating system.

Overall, the NS 700 delivers almost all the hardware features an administrator could want from a serious departmental server.

It's Unix all right

Of course, the hardware isn't the whole story — not by a long shot. To exploit the power and flexibility of the box, these servers run an Apple-adapted version of AIX 4.1.3, IBM's PowerPC Unix implementation. And the OS is everything you would expect from Unix. While it does offer a graphical windowing environment, at its heart is a powerful but alien command-line interface.

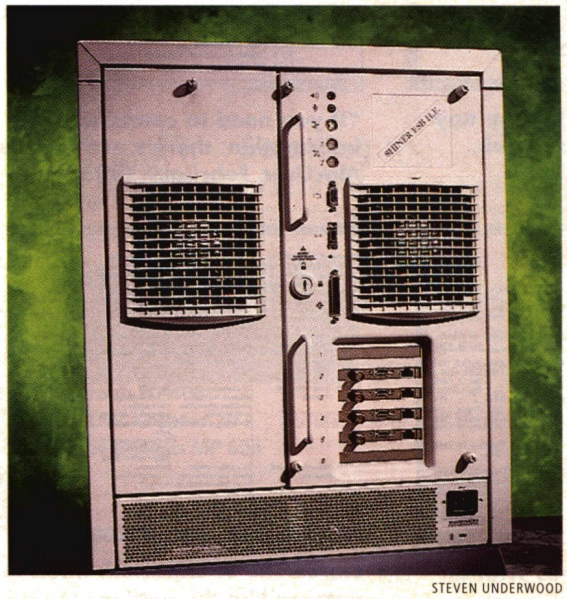
Unix novices facing the Network Servers will be able to accomplish a good deal thanks to installation assistants, the X Window System and some quite straightforward system-management menus. But they may feel helpless if anything goes wrong. Based on our experience with the NS 700, you should not trust your business to these boxes unless you have Unix administrators on hand.

This version of AIX includes some new features that will please Mac and Unix enthusiasts. Apple has optimized the AppleTalk protocol stack for AIX to improve file-sharing performance. The Logical Volume Manager and Journal File System (JFS) provide tremendous flexibility and robustness for stored data. Administrators can expand file systems, which are AIX's analogs to Mac volumes, on the fly. File systems can span multiple disks without a RAID controller, and managers can add new disks to an existing file system while it is in use. Mirroring and striping are provided by the OS.

As changes are made to the data on a disk, JFS keeps a log of these updates. If your server goes down, JFS uses the log to repair any harm done. While previously open files might be damaged, the whole file system comes back just fine. We tried it, and it works. This data security will bring a big smile to the faces of administrators who have experience with other flavors of Unix, where incorrect shutdowns can mean hours or days of reconstructive work.

Apple has also enabled AIX to respond to Apple events. This means that developers can create Mac front ends for some Unix tasks, and Apple includes two applications with the Network Servers that utilize this capability. Command Shell is a terminal emulator that allows you to enter AIX commands from any Mac on the LAN. The Discus application offers the administrator a Mac interface for configuring storage, which makes

See Shiner, Page 46



STEVEN UNDERWOOD

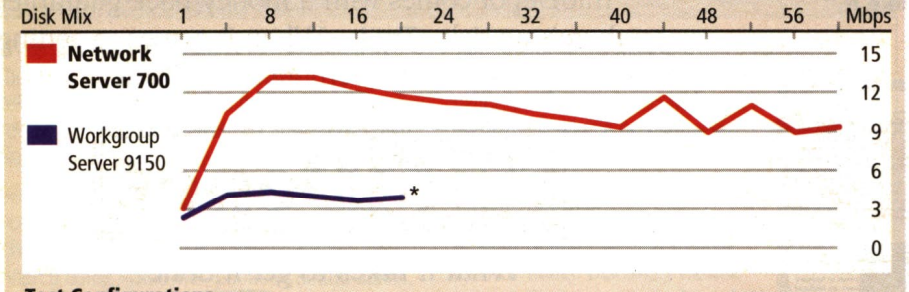
Most built-in ports (for standard Ethernet, SCSI, ADB, serial and VGA graphics) run down the middle of the Network Server. Optional twin, load-sharing fans keep the engine cool.

MACWEEK BETA TEST LABS

High-speed, more users

Apple's Network Server 700 is able to use four Ethernet connections compared to one in older Mac OS-based servers. That difference accounted for a good part of the AIX-based server's performance advantage.

Total throughput with various numbers of NetBench clients



Test Configurations

Network Server 700 pre-release hardware with 150-MHz PowerPC 604 CPU, 48 Mbytes RAM, 1-Mbyte Level 2 cache, two 2-Gbyte Fast and Wide SCSI-2 striped drives, four PCI Ethernet cards, AIX 4.1.3, and a pre-release version of IPT's uShare for AIX.

Workgroup Server 9150 Power Mac with 120-MHz PowerPC 601 CPU, 48 Mbytes of RAM, 1-Mbyte Level 2 cache, one 2-Gbyte Fast SCSI-2 drive, single built-in Ethernet port, System 7.5.2 and AppleShare 4.2.

*The Workgroup Server could not continue because there were too many open files for the Mac OS.

CREATIVE COMPUTERS MacMall™ YOUR MAC SUPERSOURCE!™

"The Only Catalog Every Mac™ Owner Should Have"

The Catalog(s) with the Great Deals!

MicroMac Technology

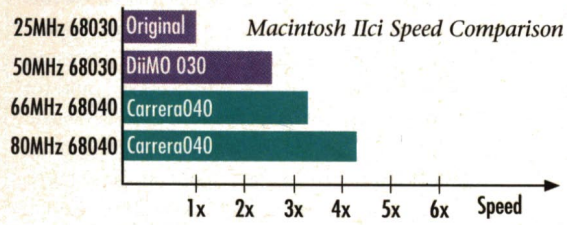
ALL Adapter Boards FREE!

68040/30 Mac™ II Series Accelerators

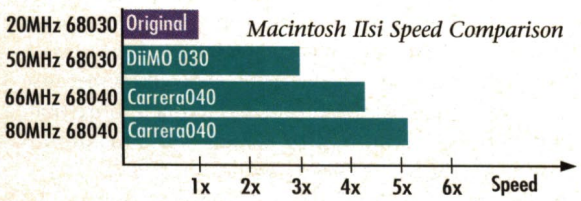
Select the Price/Performance for Your Needs

68040 from $299

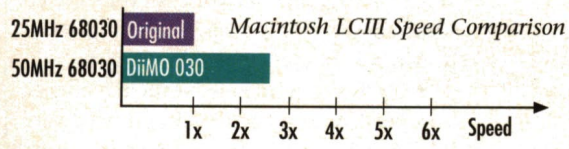
MicroMac introduces the 66/33MHz or 80/40MHz 68040 Carrera accelerator for the Macintosh IIci, IIsi, IIcx & IIx with optional FPU and 128KB cache card.



Macintosh IIci Speed Comparison



Macintosh IIsi Speed Comparison



Macintosh LCIII Speed Comparison

68030 from $199

MicroMac offers the raw computing power of the DiiMO 030 accelerator for your Macintosh® II, SE/30, LCIII, IIci (IIvx, IIvi, Performa® 600), IIsi, IIcx or IIx. With a 50MHz 68030 CPU, 64K RAM Cache and optional 50MHz FPU.

Macintosh IIci	w/o FPU	Order #	w/FPU	Order #
DiiMO 030 50MHz 68030	$199.99	# 79095	$249.99	# 79096
Carrera040 66/33MHz 68040	299.99	# 73306	399.99	# 73307
Carrera040 80/40MHz 68040	499.99	# 73308	599.99	# 73309
CarreraTurbo 128KB Cache Card	99.99	# 73322		

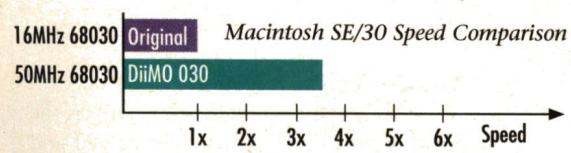
Macintosh IIsi	w/o FPU	Order #	w/FPU	Order #
DiiMO 030 50MHz 68030	$199.99	# 79097	$249.99	# 79098
Carrera040 66/33MHz 68040	299.99	# 73310	399.99	# 73311
Carrera040 80/40MHz 68040	499.99	# 73312	599.99	# 73313
CarreraTurbo 128KB Cache Card	99.99	# 73322		

Macintosh LCIII	w/o FPU	Order #	w/FPU	Order #
DiiMO 030 50MHz 68030	$199.99	# 79087	$249.99	# 79088

Macintosh SE/30	w/o FPU	Order #	w/FPU	Order #
DiiMO 030 50MHz 68030	$249.99	# 79089	$299.99	# 79090

Macintosh II	w/o FPU	Order #	w/FPU	Order #
Marathon 32MHz 68030	$99.99	# 79091	$149.99	# 79092
DiiMO 030 50MHz 68030	249.99	# 79093	299.99	# 79094

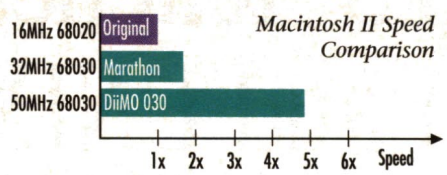
Also available for the Macintosh® IIcx & IIx



Macintosh SE/30 Speed Comparison

68030 from $99

The MicroMac Marathon accelerator offers economical processing power for your Macintosh II. With a 32MHz 68030 processor and optional 32MHz FPU.



Macintosh II Speed Comparison

68040/030 LC and LCII Accelerators...*Break the 10MB Barrier!*

68030 from $99

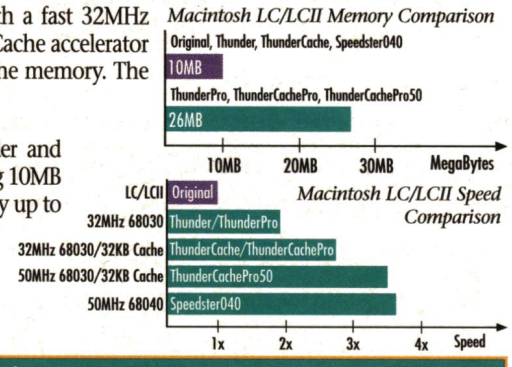
MicroMac's Thunder accelerator boost the performance of your LC or LCII with a fast 32MHz 68030 CPU. This entry level model comes with an FPU. The MicroMac Thunder Cache accelerator combines the pure speed of the 32MHz 68030 CPU with an ultra-fast 32KB Cache memory. The optional 32MHz FPU makes working with spreadsheets and graphics a breeze.

68030 from $199

The ThunderPro and ThunderCachePro accelerators are the same as the Thunder and ThunderCache accelerators with the addition of four SIMM slots to break the limiting 10MB RAM barrier associated with the LC and LCII. Allowing you to upgrade your memory up to 26MB. And the ThunderCachePro is available at 50MHz for even more speed.

68040 from $299

The MicroMac Speedster 040 accelerator offers impressive Quadra performance for your LC or LCII with a 50/25MHz 68040 CPU with optional FPU.



Macintosh LC/LCII Memory Comparison

Macintosh LC/LCII Speed Comparison

Macintosh LC	w/o FPU	Order #	w/FPU	Order #
Thunder 32MHz 68030			$138.99	# 69219
ThunderCache 32MHz 68030 w/32KB Cache	$199.99	# 69220	249.99	# 69221
ThunderPro 32MHz 68030 w/4 SIMMs Scks	199.99	# 69222	249.99	# 69223
ThunderCachePro 32MHz 68030 w/32KB Cache & 4 SIMMs Scks	249.99	# 69224	299.99	# 69225
ThunderCachePro 50MHz 68030 w/32KB Cache & 4 SIMMs Scks	299.99	# 69226	349.99	# 69227
Speedster040 50/25MHz 68040	299.99	# 79079	399.99	# 79080

Macintosh LCII (Performa 4xx)	w/o FPU	Order #	w/FPU	Order #
Thunder 32MHz 68030			$138.99	# 69228
ThunderCache 32MHz 68030 w/32KB Cache	$199.99	# 69229	249.99	# 69230
ThunderPro 32MHz 68030 w/4 SIMMs Scks	199.99	# 69231	249.99	# 69232
ThunderCachePro 32MHz 68030 w/32KB Cache & 4 SIMMs Scks	249.99	# 69233	299.99	# 69234
ThunderCachePro 50MHz 68030 w/32KB Cache & 4 SIMMs Scks	299.99	# 69235	349.99	# 69236
Speedster040 50/25MHz 68040	299.99	# 79083	399.99	# 79084

Some models available for the Macintosh® Color Classic

We're open to take your order anytime, 24 hours a day, seven days a week.

Order toll free: 1·800·222·2808

24 HRS A DAY 7 DAYS A WEEK

WIN A BRAND-NEW PORSCHE 986/BOXSTER
MAC BLOW
PCI Power Macintosh As Low As $999?
PowerBook 150 ONLY $1199!
Performa 636CD $949!
Performa Price REBATES!
631CD
As Low As $1249!
1·800·222·2808
Enter the Dream Machine Sweepstakes
You could win this Porsche Boxster
Call 1·800·222·2800
For Our Full Line Catalog & Get All The Details
No purchase necessary. For complete details including official rules see the MacMall catalog 57 or higher. Sweepstakes open to US residents 21 years of age or older. Void where prohibited. Car depicted is a prototype. Actual car to be awarded may vary.

Get your **FREE** catalog(s) today!

Please Check catalog(s) you wish to receive.

- ❑ MacMall
- ❑ PC Mall
- ❑ DataCom Mall

MacWeek ZMWE622

Name _____

_____

Address _____

_____

City _____

State _____ Zip _____

Mail to:
MacMall, Dept. ADV., 2645 Maricopa St., Torrance, CA 90503

Shiner

From Page 44

striping, adding disks and creating file systems as easy as point, click and drag. One thing to note, though: If something goes wrong with the disk, you still have to know Unix, and those comfortable with Unix may find it faster to work at the console.

Unlike Apple's Workgroup Servers, the Network Servers are not bundled with a file and print services package. Apple worked with the leaders in professional publishing server software to make sure that Open Prepress Interface (OPI), file-server, color-management and image-database software will be available. Since Network Servers will generally be purchased through value-added resellers, the server will probably come into your hands preconfigured with such software.

All servers will ship with a CD-ROM that includes backup software from Legato Systems Inc. and evaluation copies of offerings from Information Presentation Technologies Inc. and Helios Software GmbH. IPT in particular will offer new server administration tools tuned for the Network Servers and may even sell and support Apple's hardware as a pre-press systems integrator.

New speed limits

To get a feel for how these new products will function as file servers, we compared the pre-release Network Server 700 running IPT's uShare for AIX with a Workgroup Server 9150 running AppleShare 4.2 on the Mac OS. The NS 700 was equipped with four simultaneously active Ethernet segments, which effectively quadrupled the network bandwidth of our test machine. We configured the WS 9150 to use the one built-in Ethernet port. Unlike the new PCI-based Workgroup Servers Apple will announce this week, the 9150 does not support multiple active network interface cards.

To stress each box, we ran the NetBench 4.0 file-server benchmark. NetBench's standard Disk Mix test emulates typical business users accessing server data at very high loads; each NetBench client performs the work of several real-world users. By testing with varying numbers of clients, we determined each server's peak performance. It is important to note, however, that Apple's servers will be used for CPU-intensive, server-based processes, such as OPI, and for moving large image files across the network. Our Disk Mix results are only a general guide to the machines' speed at these tasks.

The Workgroup Server 9150 peaked at 4.3-Mbps throughput with eight NetBench clients. The AppleShare server consistently choked when we tried to test with more than 20 clients, most likely because the Disk Mix test tried to open more than 346 unique files, which is the maximum the Mac OS can handle.

The NS 700 topped out at more than 13.2 Mbps, 200 percent higher than the WS 9150. What's more, the Network Server showed admirable staying power, delivering about 10-Mbps sustained throughput while supporting 60 simultaneous NetBench clients. Equipped with more RAM and hardware RAID and servicing fewer clients accessing larger files, we expect the Network Server to show even better performance.

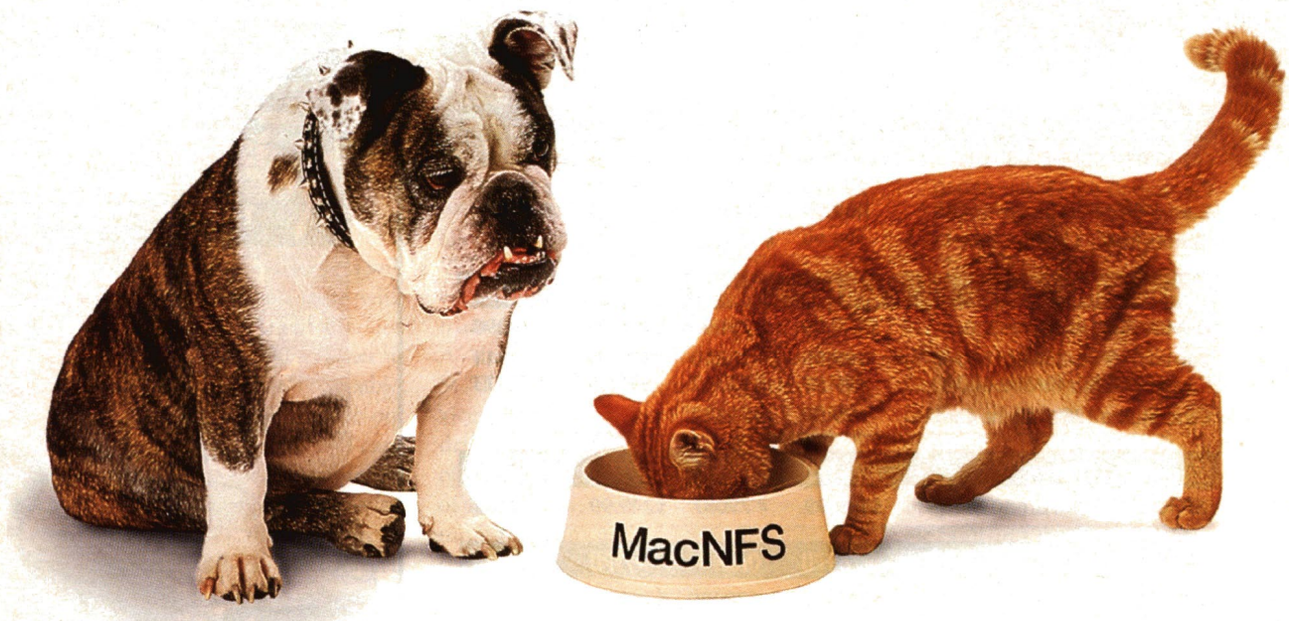
Conclusions

We think Apple has hit the nail on the head with the Network Server 500 and Network Server 700. Strong functionality and performance, friendly design, aggressive price points, and the Apple logo make these excellent alternatives to midrange Sun, SGI and IBM solutions. We expect publishing, technical and university environments with an entrenched base of Mac clients and Unix knowledge will find Apple's Network Servers quite attractive.

However, key questions remain for potential buyers. Is the NS 700 a first step for Apple, or the end of the line when it comes to high-end servers? Competing Unix servers have a long history and dedication to this market — does Apple? When can we expect a multiprocessor version? Although Apple said these boxes are designed for multiple CPUs, the company is making no promises this week. Will third parties offer a wide variety of supporting peripherals and expansion cards? In general, will the product line evolve to meet the market's needs?

If Apple can continue to build on the foundation it has laid, the Network Server line could turn into a real success story.

Apple can be reached at (408) 996-1010 or (800) 776-2333; fax-back (800) 462-4396; http://www.info.apple.com. □



MacNFS™ teaches your Macintosh and UNIX to share.

Not long ago, Macintosh and UNIX machines were about as compatible as, well you know. Now, you can achieve true NFS connectivity with MacNFS from TSS. MacNFS lets users share information with multiple-vendored UNIX machines as if they were on a local Macintosh volume.

- **The only Open Transport Ready NFS client available**
- **Shares data with UNIX, DOS, and Windows applications**
- **The fastest and most reliable NFS client for the Macintosh**
- **MacNFS is as easy to use as AppleShare**

For an immediate NFS solution for your Macintosh, contact us today!

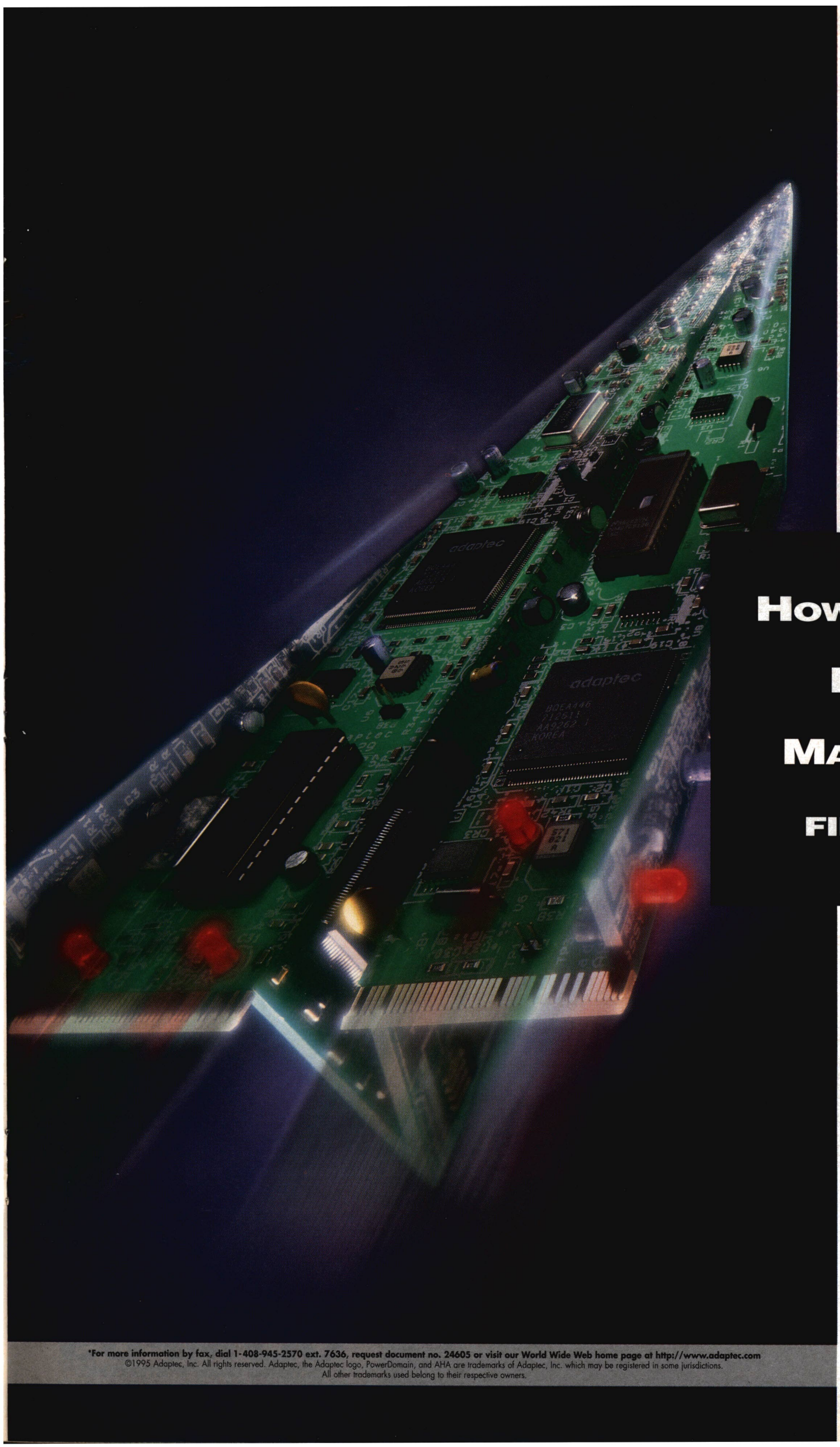
TSS

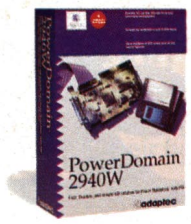
Thursby Software Systems, Inc.

5840 West Interstate 20 • Arlington, TX 76017 U.S.A. • Telephone: (817) 478-5070
Facsimile: (817) 561-2313 • Internet: sales@thursby.com • www: http://www.thursby.com

Mac™OS

©1996 Thursby Software Systems, Inc. Mac and the Mac OS logo are trademarks of Apple Computer, Inc., used under license.





Accelerate your PCI Bus with SCSI.

The Apple® Power Macintosh™ is fast. And, the new PCI bus makes it even faster. But without Adaptec® PCI-to-SCSI acceleration, it may never reach full throttle.

Introducing the hot new Adaptec PowerDomain™ 2940W SCSI accelerator. It'll make you feel like you turned a crop duster into a super-sonic jet. It's the fastest PCI-to-SCSI card available. Watch your Adobe® PhotoShop™ files fly at top speed

HOW TO MAKE POWER MACINTOSH FILES FLY.

— up to 40 MB per second. Plus, it's also designed for Ultra peripherals today.

But, that's the performance people expect from Adaptec. For over a decade, we've made SCSI the performance I/O of choice. In fact, after helping to develop the PCI standard, we've shipped over 1.2 million PCI-to-SCSI boards — more than all of our competitors combined.

So the next time you're finger tapping while you wait to capture a digital file, call 1-800-804-8886 ext. 7636.* We'll tell you how your Power Macintosh can really take off.

adaptec®

I/O. NOW MORE IMPORTANT THAN EVER.

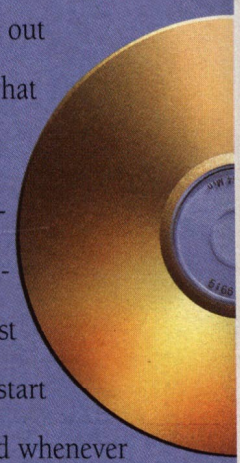
***For more information by fax, dial 1-408-945-2570 ext. 7636, request document no. 24605 or visit our World Wide Web home page at http://www.adaptec.com**

©1995 Adaptec, Inc. All rights reserved. Adaptec, the Adaptec logo, PowerDomain, and AHA are trademarks of Adaptec, Inc. which may be registered in some jurisdictions.
All other trademarks used belong to their respective owners.

YOU'RE OLD ENOUGH TO KNOW THE DIFFERENCE BETWEEN WRITE AND ROM.

If you still think CD is a read-only medium, it's time you discovered the error of your ways.

That's because Olympus has turned CD into something you can write to, as well. And while there are other CD writers out there, none holds a prayer to what the Deltis™ CD-R2 can do.



Not only is the CD-R2 double-speed, it's multi-session and multi-format, too. So you can record just about whatever you want, and start and stop recording wherever and whenever you choose. It's also designed to adapt to future formats, so it won't become obsolete overnight.

And while patience is a virtue, you won't have to wait to start writing with the CD-R2 because it comes complete with everything you need — including multimedia software that's so easy to use, anyone can record with it.

All of which make this CD recorder perfect for packing up to 650 MB of information or presentation materials, with audio and animation, onto a disk. As well as for making your own music, data or Photo CD.

So call **1-800-347-4027** and find out where you can get the Deltis CD-R2 today.

Because with so much going for it, you simply can't go ROM.

Deltis is a trademark of Olympus Optical Company, Ltd. All other brand or product names mentioned herein are trademarks or registered trademarks of their respective holders.
©1995 Olympus Image Systems, Inc.

The Deltis CD-R2 Recorder can be purchased through the following catalogs: MacWarehouse (1-800-255-6227), PC & Mac Connection (1-800-800-1111), MacZone (1-800-248-0800), and PrePress Direct (1-800-443-6600). *Resellers, please call* TechData (1-800-237-8931) or Ingram Micro (1-800-456-8000).

OLYMPUS
OLYMPUS IMAGE SYSTEMS, INC.

ACCOUNTING

Managing multiple books: Finding software that works

By Eric Taub

Users find that accounting packages don't live up to their original expectations.

Business is starting to boom for Christopher Keser, a supplier of aloe vera products for wholesalers and distributors around the world. But when it comes to finding accounting software to help manage the growing accounts of Keser's Syracuse, N.Y.-based Aloe Vera Products of North America Inc., he's left feeling burned.

"I'm ready to move up from my low-end accounting package, MYOB, to a midrange product," Keser said. "But I can't find anything out there that is right for my business that isn't full of bugs and inadequacies. Until I do, I'm going to create my own templates on [Claris Corp.'s] FileMaker Pro; and I may stay with FileMaker Pro forever."

Keser is not alone in what has turned out to be a frustrating quest for an accounting package that will do the job he needs. Of all the software applications, few appear to generate as much frustration, disappointment and enmity as accounting solutions.

Part of the problem lies in the complex nature of the application. The same accounting software is expected to solve the fiscal problems of a wide range of professionals, and what works in a retail company may not work in a medical office. Many businesses have specific accounting needs and their own ways of entering data, accounting for inventory, billing customers for time and goods, and registering royalties. In addition, bookkeepers accustomed to working by hand are not likely to find the switch to a standardized environment an easy one.

"Every person's business has some quirks, so it's very difficult to write a package that can cover all those pieces," said Chris LeTocq, director of PC software for Dataquest Inc. of San Jose, Calif.

The convoluted techniques, often long learning process (especially for high-end packages) and computer-naive customers have spawned an especially rich breeding ground for software consultants. For a fee, these hand-holders will guide confused business owners to the right software, whether it is a $150 to $200 entry package or a mid- to high-range application that can cost upward of $20,000 for a full installation.

JAMIE TANAKA

The right numbers come up for Steve Cooper, owner of Bingo West in Hayward, Calif., when he accounts for his bingo products with Great Plains Software's Dynamics.

Meet the candidates

Some of the least expensive products include QuickBooks Pro from Intuit Inc. of Menlo Park, Calif., and Peachtree Accounting from Peachtree Software Inc. of Norcross, Ga., as well as MYOB from Best!Ware Inc. of Rockaway, N.J. Business owners who need full-featured packages that work on a network or at multiple sites should investigate such programs as Connected Accounting from EveryWare Development Corp. of Mississauga, Ontario; Mac P&L from State of the Art Inc. of Irvine, Calif.; MultiLedger from Check-Mark Software Inc. of Fort Collins, Colo.; and Big Business from Big Software Inc. of Los Altos, Calif.

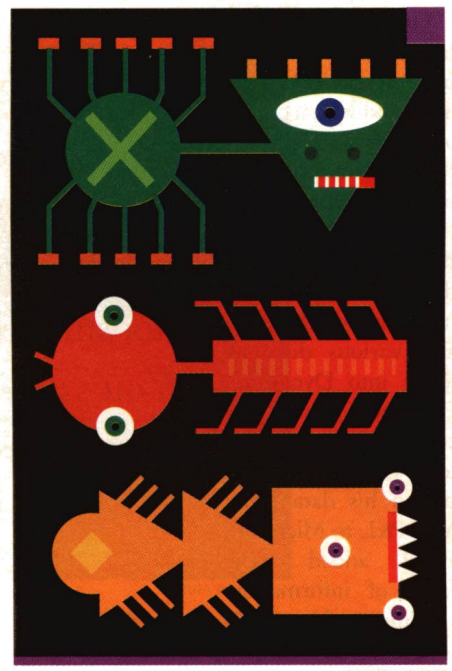
Users who are doing large numbers of transactions, order taking, invoicing and payroll over a network will gravitate to the high-end programs such as A4 from Softek Design Inc. of Telluride, Colo; Dynamics and Great Plains Accounting from Great Plains Software Inc. of Fargo, N.D.; Flexware from State of the Art; and Maconomy from Maconomy NE Inc. of Marlborough, Mass.

"Choosing accounting software is like choosing a life's mate," said Peggi Sturm, owner of West Los Angeles-based Peggi Sturm and Associates, an accounting consultancy group. "You've got to make concessions. Everyone wants a program that accomplishes 110 percent of their needs, so one that does 80 percent of what they want annoys them."

A consultant may be able to narrow the choices and point users in the right direction, but nothing can take the place of hands-on experience. Unfortunately, that can often amount to a significant expenditure of time and energy.

Perhaps no one knows that better than Steve Cooper, owner of Bingo West, a Hayward, Calif.-based manufacturer of bingo cards and distributor of bingo equipment. Cooper spent two years inputting data and learning how to use Dynamics to track finances for his 50-employee company, yet he still hasn't completely mastered the program.

See Solutions, next page



GORDON STUDER

MACINTOUCH

RIC FORD

Following freaky bugs in, around the Mac OS

On the heels of the problem described last week, in which AppleShare 3.6.1 and Connectix Corp.'s Speed Copy 1.1 corrupt files (see 02.19.96, Page 35), Connectix released a small system extension that patches AppleShare to fix the glitch. The AppleShare 3.6.1 Patch and more information are available from Connectix's Web page at http://www.connectix.com/AppleShare/.

System 7.5.3 apparently will contribute to the problem rather than relieve it: The new Mac OS release includes AppleShare 3.6.1 as a standard component. (Previously, AppleShare 3.6.1 was installed from the AppleShare Workstation 3.6.1 Installer or with AppleShare server 4.2.)

There are a few other known issues involving Speed Doubler, although none of these involves data corruption. An obscure bug in Speed Emulator, for example, affects only special scroll bars in music software from Mark of the Unicorn Inc.

There are problems with Speed Copy in two special situations: removable cartridges using block sizes larger than the 512-byte standard and also tapes accessed through Optima Technology Corp.'s DeskTape 2.0, a utility that mounts tapes as volumes on the desktop. Speed Copy can be disabled tem-

See MacInTouch, next page

SOLUTIONS

From previous page

"I was a Mac P&L user but decided to switch to Dynamics because Mac P&L couldn't track inventory held in multiple locations," Cooper said.

He also needed software that would keep track of all the parts that make up his product. Inventories had to be kept showing how many individual bingo cards in multiple colors were available to combine into 20-sheet packs for shipping.

Over a two-year period, Cooper entered data on 4,000 products, including weight, price and various discount levels into Dynamics. Once he was ready to completely switch over to Dynamics, he exported his data from Mac P&L to Microsoft Excel, added extra fields of information and imported it to Dynamics.

"Running the program through an AppleShare network has proved impossible," Cooper said. "The program blazes on one computer, but on AppleShare it's a dog." He has decided to switch to an Intel-standard server, using Macs as clients. "Apple engineers are trying to convince me not to make the switch," he said.

Carolyn Fetter runs a two-person company that sells specialized dental products for those with physical disabilities. Her company, Specialized Care Co. of Edison, N.J., has been keeping its books with Mac P&L. She recently started another company selling toys for children with learning disabilities, but now that the company is growing, the software is no longer adequate.

"The program only allows us to cost out items to two decimal points," Fetter said. "But a swab costs me 0.666 cents each. I order them by the thousands, so my balance sheet carries the value at an improper level, and everything's always out of whack."

Frustrations exist at the opposite end of the accounting spectrum as well. Aloe Vera Products' Keser moved from MYOB to Big Business because he needed to operate the software in a networked environment. "As I sell all around the country, I needed to show not only multiple sales tax districts but those districts for which I do not charge tax," he said."MYOB would not allow me to sort my sales by each tax district, but the government demands that I do."

> "Choosing accounting software is like choosing a life's mate. You've got to make concessions."
>
> — *Peggi Sturm*

Keser has been running Big Business for six weeks but found it less than satisfying. "I can only print one invoice at a time because there's no print dialog box. And there is no way for me to send a client a prepaid invoice, assuming they've already paid with a credit card," Keser said.

"Big Business' reports functions are great, but neither Big Business nor any other package I've looked at has a predefined box to enter credit card data, yet that's the most common thing in the world."

Go for flexibility

Although some users would like their accounting packages to be as adaptable as possible to accommodate the way they work, others see that as a disadvantage. Edward Foster, logistics and export manager for New England Classic Interiors, an eight-employee building products exporter based in Portland, Maine, has warned his colleagues against the use of customizable accounting software.

"You can't cycle test the changes, and they may be full of bugs," Foster said. "One change may work while another may not. The changes may not be compatible with the next version of the package, and the software company may no longer support the product.

"Peachtree Accounting was fine when we were shipping a small amount of product, but when we began to ship furniture last year, we needed a program that had advanced inventory control as well as order processing," he said. "With Peachtree, neither the number of lines in each invoice nor the number of lines in the description field were sufficient. Peachtree allowed us to show the number of items on hand and on order, but we could not commit inventory on hand for a future order. Nor could we take a sales order and create a purchase order."

Foster has tried the demonstration software from EveryWare and is leaning toward purchasing it. "I called a local user and he said he didn't love Connected, but it works for him," Foster said. "I have no passion for accounting packages. I just want it to operate without a lot of surprises."

Clearly, no one program is right for everyone, and there are some businesses for which none of the general packages seems to fit. Medical and mental health professionals, for instance, need to have an automated way to fill out managed-care forms, yet none of the commercial products offers that feature.

Amy Wolf, the manager of accounting systems for Pittard Sullivan, a Hollywood, Calif., company that designs film titles, spent six weeks looking for a suitable Mac accounting program but found none. "We've got enough skilled people here that we don't need a consultant to help us," Wolf said. "In the film business, we need to deal with co-op advertising, movie grosses, advances and profit participation. I've looked at several high-end programs, and I'm not satisfied that they can adapt to the peculiar needs of the film business."

There are several steps that anyone can take to maximize the chance that they'll purchase usable software. Sturm recommends that users make a list of their needs. "Then you have to distinguish between your needs and your wants," she said. "Do you really need the ability to keep records in three decimal places, or do you just want that?"

Getting organized

Accounting consultant Dave Weston of Huntington Beach, Calif., first asks his clients to show him a chart of accounts, a list of categories to indicate how money is sorted. That way, he can determine how many separate revenue accounts a program needs to handle. Then he'll look at a typical invoice to see its organization. If the company is a manufacturer or distributor, he'll ask to see the warehouse. If the stocked goods have long serial numbers, that may present a problem for some software.

"Don't read product reviews. Instead, take a class at a Mac school," Sturm said. "Contact the software company and ask for names of other users. The one thing not to do, however, is to hire your accountant as a consultant. Accountants don't necessarily understand computers."

After all the work and false starts involved in choosing a package, does accountancy software help a business run more smoothly? Even the most computer-shy individuals seem to think so.

"I've spent hundreds of hours learning Dynamics, and my employees needed to learn data entry and import and export," Bingo West's Cooper said. "With my business growing the way it is, I could no longer keep track in my mind of what's selling and what's not. I spent over $10,000 on this program, but without it, I'd be employing a second accountant for $20,000-plus per year." □

MACINTOUCH

From previous page

porarily by holding down a modifier key while copying in these situations.

As noted in Connectix's Speed Doubler documentation, it is counterproductive to use Speed Access while also using driver-level disk caching, such as that offered by Casa Blanca Works Inc.'s Drive7, since the two caches work at cross-purposes.

Reader Tom Sheppard encountered a problem with Speed Doubler and Drive7, but it was unrelated to caching. Sheppard found that printing to an Apple Color StyleWriter Pro with Speed Emulator and Drive7 installed was much slower than normal, although he could print to other devices without a problem. Formatting his drives with a different utility or removing Speed Emulator solved the slowdown. Connectix and Sheppard are still trying to isolate the culprit.

A few other performance problems linger with serial-port devices and Speed Doubler, particularly with PowerPC accelerator cards. Connectix is working on these issues and recommends using the latest Apple updates, such as SerialDMA 2.0.2 (see 02.19.96, Page 31 and 12.04.95, Page 52). You can contact the company with reports of any clearly identified Speed Doubler problems not addressed in the latest release or its documentation.

MEO messes

Apple's Macintosh Easy Open (MEO) control panel promised to make life easier in a world of multiple operating systems and document types, tackling file conversion and such dumb Finder problems as the "document could not be opened" dialog. Unfortunately, MEO introduced additional problems of its own, including crazy desktop rebuilding habits (see 05.29.95, Page 33) and user interface performance penalties. One source even fingered MEO 1.1.1, part of System 7.5 Update 1.0, as the culprit in directory corruption.

> **Without MEO on certain Macs, some applications may crash or fail.**

Now the utility is involved in more trouble, and you cannot simply disable it as you previously could. Instead, if you do *not* have MEO installed on some PowerPC 603- and 603e-based systems (such as the 5200, 6200 and 6300 series), some applications, such as Adobe Photoshop, Illustrator and PageMaker 6; Ray Dream Inc.'s Designer; and Strata Inc.'s StrataVision, crash or fail with spurious messages about memory problems.

Meanwhile, PageMaker 5 has problems with file import and plug-ins when MEO *is* enabled, and MEO is reportedly responsible for the mysterious "drag delay" on PowerBook 5300 models. Reader Jerry Thompkins reported strange interactions between MEO and the APS PowerTools 4.0 disk formatter.

The bottom line is that MEO is problematic, and it is no longer possible to simply disable it. Apple needs to clean this mess up.

Twilight zone

On the subject of freaky, undocumented problems, reliable sources recently tipped me about one of the strangest ones yet. It seems that using SCSI ID 5 can be problematic with PCI-based Macs, although we do not have full details on this particular bug yet.

If your PCI Power Mac is freezing while accessing a device at ID 5, or corrupting data during a backup with this ID involved, try changing the ID to something else (and let me know the results.)

Users in the comp.sys.mac.portables newsgroup recently discovered a common thread among damaged serial ports in recent PowerBooks: The owners all were using external Supra 28.8-Kbps fax modems, and there could be issues with other external modems, as well. □

Comments on MacInTouch are welcome at (508) 897-2621. Please address e-mail to 72511,44 on CompuServe or ricford@macintouch.com on the Internet. The MacInTouch home page is at http://www.macintouch.com/~ricford/.

Joint work flow taps new revenue

By Anita Malnig

J. Walter Thompson Co.'s collaborative pre-press gives ad agency more creative control.

At the venerable New York ad agency J. Walter Thompson Co., creative control is a business imperative. The agency must meet the competitive needs of clients such as Ford Motor Co., Eastman Kodak Co. and Kellogg Co., lest it wind up on ADWEEK's Accounts in Review list.

Generating revenue and controlling costs are business imperatives, too. So to accomplish financial goals and strengthen creative control, the agency explored bringing certain pre-press functions in-house.

One of the ways an agency makes money is to charge a client a percentage above what it pays for materials such as color comps and proofs. Making those comps and proofs in-house would allow the agency to charge the client a little less, said Brad Mintz, partner and administrative manager in the electronic production services group.

Mintz said he felt the agency could gain revenue by doing photo retouching in-house — if not all, then some of it. He also knew he wanted to work with a pre-press house he already had experience with, New York-based Kwik International Ltd., which consistently ranks on top 10 lists of U.S. pre-press shops.

Brainstorming with Kwik got under way. "We told [JWT] the good, the bad and the ugly," said Kwik CEO and President Richard Sirota. "But I knew Thompson was an agency open to technology and how it would benefit the creative product."

In the spring of 1994, Jeffrey Riman, Kwik vice president of operations, and Mintz worked out a plan requiring in-house drum scanners and Power Macs running Adobe Photoshop for image retouching. "The concept of the original proposal was for us to help them take advantage of the pre-press aspects of design," Riman said.

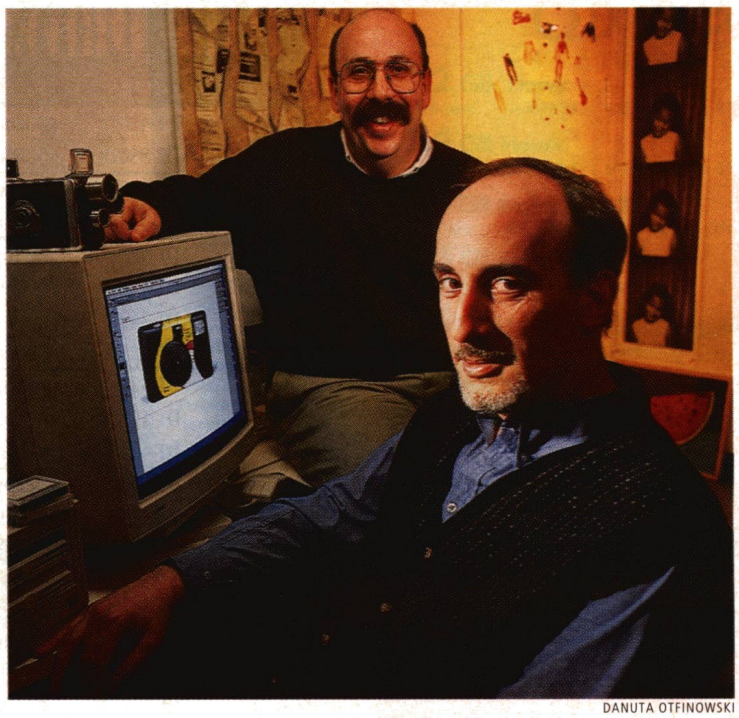
But as Riman and Mintz were hammering out their proposal, Mintz began to see that being "an extension of each other's shops" with this hardware setup was going to cost more money than Mintz's upper management would accept. The project was shelved; the companies continued a working relationship.

Enter Live Picture

In the fall of 1995, JWT Chairman and CEO Burt Manning was approached by business acquaintance John Sculley, CEO of Live Picture Inc. of Soquel, Calif. Its Live Picture Mac-based image-editing and composing program has been on the market for several years and offers near real-time editing of extremely large files. Sculley and his staff were looking for a pilot site for its Live Picture Network, released this week at Seybold Seminars Boston 96, which targets agencies, pre-press houses, publishers and catalog makers. It uses servers from Silicon Graphics Inc. and specialized server software developed by Palo Alto, Calif.-based Torque Systems Inc. to facilitate operations such as rasterizing, file sharing and Open Prepress Interface conversion.

The powers that be met and agreed the product had potential. "Live Picture is a good conduit for overlapping creative work and pre-press manufacturing," Riman said.

Mintz saw dollar signs. "This seemed like a solution to let me generate similar revenue for a lot less overhead," he said.



DANUTA OTFINOWSKI

Brad Mintz of J. Walter Thompson (back) and Jeffrey Riman of Kwik work closely together on a Live Picture pilot program. On screen is the new Kodak Advantix camera for which JWT is doing the ad campaign.

A typical job moves from one site to the other like this: Kwik scans in an original image and converts it to the IVUE format. It saves that as an IVUE.JPEG file, then sends it over a direct ISDN (Integrated Services Digital Network) link provided by ImageNet, a division of Cornell Data Systems Inc. of Basking Ridge, N.J., to the agency's Silicon Graphics server. Kwik also messengers a proof from the Kodak Approval digital proofer to JWT for color correction.

Then, Mintz said, an agency art director looks over a Mac artist's shoulder, directing the fate of the image. All executions are sent back to Kwik in 1.5-Mbyte FITS (Functional Interpolating Transformation System) files that get applied to the original IVUE file. (A typical 45-Mbyte file takes five minutes for a build on a Mac, less than that on the SGI server.) There are several more rounds of files and proofs, including the final in which the image is incorporated in a QuarkXPress file, which contains the entire ad.

Conversion contortions

"[Live Picture] makes life a lot quicker," said Ali Weheda, who does photo retouching at JWT. "You do your work and send out the FITS file. I don't tie up my computer anymore, [as happened with Photoshop]."

But a stumbling block in the work flow is moving the built file back into Photoshop, a staple of any creative environment. Live Picture recommends doing all Photoshop work first, but as Weheda pointed out, "If you want to apply a Photoshop filter globally to a color-corrected, retouched Live Picture image, you must first build it in the FITS RIP, save it as a TIFF file and then open it in Photoshop to apply the filter."

However, for discrete corrections a Photoshop plug-in called FASTedit/IVUE from Total Integration Inc. of Palatine, Ill., will let you open a section of the image in Photoshop from Live Picture, work on the localized area, then continue your Live Picture work.

More advantage in the process

"There's a way to do almost everything with Live Picture that you can do with Photoshop," Riman said. "The masking and color-correction tools are very professional. I was genuinely surprised at the quality it generated."

Mintz agreed and added that the agency may see significant cost savings by cutting down on transparencies from an outside retoucher. "In the future," he said, "I'd just get the digital file from the retoucher, and we'd do the first rounds of corrections." Kwik would then fine-tune the file for final output.

JWT may also save on proofs. "Approvals are extremely expensive," said Mintz. "We go to press proofs too; instead of four or five rounds of them, we're doing one or two. And we might output on a color laser copier with a Fiery or the Kodak DCP 9000 for an initial comp."

And what about the pre-press house? If more manufacturing goes in-house at JWT does Kwik lose out? Sirota thinks not. "We think our business can grow by providing services for agencies entering the pre-press market," he said. "[Agencies are] not going to want to be a 24-hour shop. Yet if any pre-press shop thinks they're controlling their turf, they're delusional." □

Birth of a Live Picture image

With Live Picture, a scanned image is saved into Live Picture's proprietary IVUE format, to which FITS operations — which are mathematical structures — are applied. An operator (or operators, since Live Picture Network allows for several people to work on the same IVUE file simultaneously) views the on-screen IVUE file, which quickly builds a screen-resolution image at any zoom level. All operations done to the image on screen, such as silhouetting, are recorded in the FITS files, which are small and easy to send electronically. The FITS files are then applied to the original IVUE for rendering of the final image. Version 2.5 also offers a well-controlled RGB-to-CMYK conversion, its users said, which takes place in the building process.
— By Anita Malnig

J. Walter Thompson

NEW YORK

PROBLEM: Seeking greater creative control and revenue generation by bringing retouching in-house.

SOLUTION: Live Picture Network, used in conjunction with pre-press house Kwik International Ltd.

COST: $65,000 for a 20-seat license; $75,000 to $80,000 for SGI server.

SAVINGS: In-house retouching could potentially save $100,000 to $200,000.

DIRECTTech SYSTEMS INC.

CALL: 1-800-279-5520

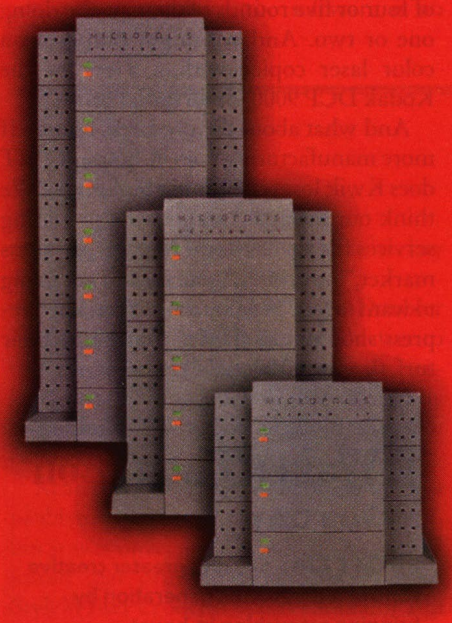
YOUR #1 SOURCE FOR STORAGE

CALL FOR LATEST PRICES

THE (STACKABLE) PHASER LINE OF ENCLOSURES, FEATURING ACTIVE TERMINATION

THE DIRECTTECH ADVANTAGE!

All Phaser-I Enclosures feature ACTIVE Termination, the latest in termination technology. Put an end to your SCSI headaches. DIRECTTECH'S active termination monitors and regulates your SCSI chain and eliminates any termination problems.



MICROPOLIS MICRODISK LT & LS

THE STACKABLE, REMOVABLE DRIVE SUBSYSTEM

Model #	*Capacity*
MDLT2100/AV	2.1 GB
MDLT4300/AV	4.3GB
MDLS9100/AV	9.1GB

NOW AVAILABLE IN FAST/WIDE CONFIGURATION.
ASK ABOUT THE MICRODISK RAID 5 ARRAY!

CALL FOR LATEST PRICING AND CONFIGURATION.

HARD DRIVES

ALL DRIVES ARE PREFORMATTED, TESTED AND PACKAGED WITH SCSI MANAGER 4.3 COMPATIBLE DRIVERS. EXTERNAL DRIVES INCLUDE CHOICE OF 25-50 OR 50-50 PIN CABLE.

Capacity	*Model No.*	*Mechanism*	*Seek*	*Warranty*	*Internal*	*PHASER-I*
420 MB	DT-420TB	Quantum	11ms	2 yrs	$150	$225
850 MB	DT-850TB	Quantum	11 ms	2 yrs	$199	$275
1.0 GB	DT-1080FB	Quantum	11ms	3 yrs	$275	$350
1.05 GB	DT-31230	Seagate NEW LOW PRICE!	9.0 ms	5 yrs	$380	$455
2.0 GB	DT-4221	Micropolis NEW LOW PRICE!	8.0 ms	5 yrs	$685	$760
2.0 GB	DT-32150	Quantum -Atlas	8.5 ms	5 yrs	$895	$970
2.0 GB	DT-2490	Hewlett Packard	9.0 ms	5 yrs	$1,100	$1,185
2.1 GB	DT-32550	Seagate Barracuda II NEW LOW PRICE!	8.0 ms	5 yrs	$775	$850
4.3 GB	DT-3243	Micropolis NEW LOW PRICE!	8.5 ms	5 yrs	$1,025	$1,099
4.3 GB	DT-15150	Seagate Barracuda NEW LOW PRICE!	8.0 ms	5 yrs	$1,199	$1,275
4.3 GB	DT-4280	Quantum	8.0 ms	5 yrs	$1,025	$1,100
9.0 GB	DT-1991	Micropolis NEW LOW PRICE!	12 ms	5 yrs	$1,950	$2,050
9.0 GB	DT-410800	Seagate Elite 9 NEW LOW PRICE!	11 ms	5 yrs	$2,025	$2,125

AUDIO/VIDEO TUNED DRIVES

DIRECTTECH SYSTEMS IS AN AUTHORIZED A/V PARTNER WITH SEAGATE AND MICROPOLIS.

Capacity	*Model No.*	*Mechanism*	*Seek*	*Warranty*	*Internal*	*PHASER-I*
1.05 GB	DT-31230AV	Seagate	9 ms	5 yrs	$380	$455
2.0 GB	DT-4221AV	Micropolis NEW LOW PRICE!	8.5 ms	5 yrs	$735	$810
2.1 GB	DT-32550AV	Seagate Barracuda	8.0 ms	5 yrs	$775	$850
4.3 GB	DT-3243AV	Micropolis NEW LOW PRICE!	8.5 ms	5 yrs	$1,075	$1,150
4.3 GB	DT-15150AV	Seagate Barracuda	8.0 ms	5 yrs	$1,199	$1,275
9.0 GB	DT-1991AV	Micropolis NEW LOW PRICE!	12 ms	5 yrs	$2,050	$2,150
9.0 GB	DT-410800AV	Seagate Elite 9 NEW LOW PRICE!	11 ms	5 yrs	$2,025	$2,125

FAST/WIDE SCSI DRIVES

MOST EFFECTIVE WHEN COMBINED WITH A FAST/WIDE ATTO BOARD. CALL FOR SPECIAL CONFIGURATIONS!

Capacity	*Model No.*	*Mechanism*	*Warranty*	*Internal*	*PHASER-I*
2.1 GB	DT-32550W	Seagate Barracuda 2LP Wide	5 yrs	$835	$910
2.1 GB	DT-4221W	Micropolis 4221Wide	5 yrs	$775	$850
4.3 GB	DT-15150W	Seagate Barracuda 4 Wide	5 yrs	$1,250	$1,325
4.3 GB	DT-3243W	Micropolis 3243Wide	5 yrs	$1,100	$1,275
9.0 GB	DT-1991W	Micropolis 1991Wide	5 yrs	$2,185	$CALL
9.0 GB	DT-1991AVW	Micropolis 1991AVWide	5 yrs	$2,285	$CALL
9.0 GB	DT-410800W	Seagate Elite 9 Wide	5 yrs	$CALL	$CALL

DISK ARRAYS/RAID

MEDIA 100 * RADIUS * DIGITAL VIDEO * TARGA 2000
ARRAYS INCLUDE - ATTO CARD, REMUS & 2 FAST/WIDE DRIVES

Capacity	*Model No.*	*Mechanism*	*Seek*	*Warranty*	*EXTERNAL*
4.0 GB	DT-32550W-2	Seagate - Fast/Wide Barracuda 2LP (2)	4.0 ms	5 yrs	$CALL
8.0 GB	DT-3243WAV	Micropolis - Fast/Wide 3243AV (2)	4.0 ms	5 yrs	$CALL
18.0 GB	DT-1991WAV	Micropolis - Fast/Wide 1991AV (2)	4.0 ms	5 yrs	$CALL

CALL FOR MORE INFORMATION ON DIRECTTECH DISK ARRAYS!

ATTO Silicon Express IV	Nubus Fast/Wide Accelerator	$CALL
ATTO Express PCI	Dual Channel - PCI -Fast/Wide	$CALL
ATTO Express PCI	Single Channel - PCI-Fast/Wide	$CALL

SYQUEST

INCLUDES ANUBIS FORMATTING SOFTWARE AND ONE CARTRIDGE

Capacity	*Model No.*	*Internal*	*PHASER-I*
88 MB	SQ5110C	$305	$365
200 MB	SQ5200	$420	$480
270 MB	SQ3270	$420	$470

CD ROM RECORDABLE

JVC Personal Archiver (2X)	$1,165
JVC Personal Archiver (4X)	$2,499

JVC External CD Recorders include cables, terminator, 2 Blank CD's and Software.

NEW JVC PRICING

TAPE

INCLUDES A FREE COPY OF RETROSPECT AND ONE TAPE

Capacity	*Model No.*	*Format*	*PHASER-I*
2 GB	HP-35470	4mm	$950
4-8 GB	Sony-5000	DDS-2	$999
4-8 GB	HP-1533A	DDS-2	$1,299
5-10 GB	Exabyte-8505	8mm	$2,150
15-30 GB	DLT-2000XT	DLT	$4,399

OPTICAL

INCLUDES ANUBIS FORMATTING SOFTWARE AND ONE CARTRIDGE

Capacity	*Model No.*	*Seek*	*PHASER-I*
230 mb	Fujitsu	30 ms	$675
1.3 GB	HP-C1716	23 ms	$2,099
1.3 GB	Maxoptix T-III	18 ms	$2,199

MEDIA

Type	*Price*
Syquest 44	$40
Syquest 88	$46
Syquest 105	$54
Syquest 200	$76
Syquest 270	$60
Optical 128 MB	$22
Optical 230 MB	$30
Optical 1.0 GB	$100
Optical 1.3 GB	$90

CALL FOR QUANTITY PRICING!

MICROPOLIS
Seagate
HEWLETT PACKARD
Quantum
SyQuest
JVC

ASK YOUR SALES REP ABOUT DIRECTTECH'S NEW WARP POLICY. (WARRANTY ADVANCED REPLACEMENT PROGRAM)

VISA MasterCard AMERICAN EXPRESS

No charge for Visa, Mastercard or Amex

Government, Corporate, and University P.O.s Welcome!

- 30-day money-back guarantee on all drives.
- Refused orders subject to restocking fee.
- RMA No. required for all returns.

Prices, terms, and availability are subject to change without notice.

All tradenames and trademarks are the property of their respective companies.

INTERNATIONAL ORDERS CALL:
PHONE: (612) 941-2616
FAX ORDERS: (612) 942-0430

DirectTech Systems, Inc. 7625 Golden Triangle Drive, Suite R Eden Prairie, MN 55344

Seagate
Elite 9.0GB
11ms Seek
Only! $1995 Internal

Quantum
Atlas 4.3GB
8 ms Seek
Only! $1075 Internal

IBM
UltraStar 2GB
7.5 ms Seek
Only! $495 Internal

IBM
DeskStar 540MB
9 ms Seek
Only! $165 Internet

Pioneer
4x CD ROM
150ms Seek
Only!$189* External
*With $29.95 CD Bundle

Ask about the exclusive ProDirect *90 DAY PERFORMANCE GUARANTEE* and receive *FREE* shipping!

Quantum

√ **365 MB Lightning**			$135	$195
11 ms Seek	4500 RPM	128K Buffer	2 Year Warranty	
535 MB	***Performance !***		175	235
9 ms Seek	5400 RPM	512K Buffer	5 Year Warranty	
540 MB	**Fireball**		180	240
11 ms Seek	5400 RPM	128K Buffer	3 Year Warranty	
730 MB	***Value!***		185	255
11 ms Seek	5400 RPM	128K Buffer	2 Year Warranty	
850 MB	***Value!***		195	255
11 ms Seek	5400 RPM	128K Buffer	3 Year Warranty	
1080 MB Fireball			255	315
11 ms Seek	5400 RPM	128K Buffer	3 Year Warranty	
2.2 GB	***Saturn***		635	695
8.5ms Seek	5400 RPM	1024K Buffer	5 Year Warranty	
2.0 GB	**Atlas**		785	845
8ms Seek	7200 RPM	1024K Buffer	5 Year Warranty	
4200 MB	**Grand Prix**		985	1045
8.6 ms Seek	7200 RPM	512K Buffer	5 Year Warranty	
√ **4.3 GB**	**Atlas**		1075	1135
8ms Seek	7200 RPM	2048K Buffer	5 Year Warranty	

Fast & Wide SCSI AV Drives

2.0 GB Atlas			885	985
8ms Seek	7200 RPM	1024K Buffer	5 Year Warranty	
√ **4.2 GB Grand Prix**			1025	1125
8ms Seek	7200 RPM	512K Buffer	5 Year Warranty	

- PowerStor™ active termination with the flip of a switch.
- 5 Year 24 Hour Replacement Warranty
- Optional Fixed Daisy Chain Connector... Puts an end to your cable nightmares
- On/Off switch Conveniently located on the FRONT of our cabinet.
- Power and Activity light located on front bezel

Featured Products

Quantum 127 MB *Powerbook Drive*		$99	$135
Q Daytona,4500RPM, 17 ms seek, 128K cache, 1 year warranty			
Quantum 341 MB *Powerbook Drive*		$169	$235
Q Daytona,4500RPM, 17 ms seek, 128K cache, 1 year warranty			
IBM 540 MB *Powerbook Drive*		$245	$325
IBM TravelStar12 ms Seek 4900 RPM 128K Buffer 1Year Warranty			
IBM 1.2 GB *DeskStar With MR Heads... FAST!*		$265	$325
IBM 31080, 5400RPM, 9 ms seek, 5 year warranty			

Seagate

1.2 GB Hawk			$375	$435
9 ms Seek	5400 RPM	512 KBuffer	5 Year Warranty	
2.4 GB Hawk			635	695
9 ms Seek	5400 RPM	512K Buffer	5 Year Warranty	
2.5 GB Barracuda 2			765	825
8 ms Seek	7200 RPM	1024K Buffer	5Year Warranty	
4.3 GB Barracuda 4			1185	1245
8 ms Seek	720000 RPM	1024K Buffer	5 Year Warranty	
2.5 GB Fast & Wide Barracuda 2			825	925
8 ms Seek	7200 RPM	1024K Buffer	5 Year Warranty	
4.3 GB Fast & Wide Barracuda 4			1245	1345
8 ms Seek	7200 RPM	1024K Buffer	5 Year Warranty	
9.0 GB Elite			1995	2095
11 ms Seek	5400 RPM	1024KBuffer	5 Year Warranty	
9.0 GB Fast & Wide Elite			2195	2325
11 ms Seek	5400 RPM	1024KBuffer	5 Year Warranty	

90 Day Performance Guarantee on all ProDirect Hard Drives... Call

IBM

IBM drives utilize IBM's advanced Magneto-Resistive(MR) disk technology which increases the amount of data stored per disk surface and reduces the number of disks and heads making the IBM series more slim-lined , reliable & Faster

540 MB			$175	$235
9 ms Seek	5400 RPM	128K Buffer	5Year Warranty	
√ **1.2 GB DeskStar**			239	299
9 ms Seek	5400 RPM	512K Buffer	5 Year Warranty	
2.2 GB UltraStar XP	***Performance!***		755	815
7.5 ms Seek	7200 RPM	512K Buffer	5 Year Warranty	
4.3 GB UltraStar XP	***Performance!***		1165	1225
8 ms Seek	7200 RPM	512K Buffer	5 Year Warranty	
5.3 GB UltraStar			1375	1435
8ms Seek	5400 RPM	512K Buffer	5 Year Warranty	

MacIntosh formatted capacities vary.. Call our hard drive experts!

FUJITSU

530 MB			$175	$235
9 ms Seek	4500 RPM	256K Buffer	3 Year Warranty	
1.2 GB			285	345
9 ms Seek	5400 RPM	512K Buffer	3 Year Warranty	
2.1 GB			685	745
8.5ms Seek	7200 RPM	1024K Buffer	5 Year Warranty	
4.2 GB			1075	1135
8ms Seek	7200 RPM	1024K Buffer	5 Year Warranty	

PCI/NUBUS FAST & WIDE ACCELERATORS

Adaptec 2940WM $295
Adaptec's Power Domain 2940W-PCI to Fast/Wide SCSI 3 Accelerator. Increase transfer rates up to 20MB/sec. on your Power Macintosh PCI system. An ideal solution for publishing, prepress, digital video, multimedia, and any graphics intensive program.

Atto Express PCI $345
Single channel RISC based PCI to Fast/Wide SCSI 3 accelerator card for Apple's PCI based computers. Ideal solution for your audio, video, prepress, and real time applications. Transfer rates up to 20MB/sec.Formatting software included.5 year warranty. Call for Disk Array Solutions! Also available in Dual Channel.

Atto Silicon Express 2 $485
SCSI 1 & 2 support,transfer rates up to 10.0 MB/sec.,supports multiple block sizes,takes advantage of parallel processing capability.Ideal for graphic design, multimedia applications and More!

Atto Silicon Express 4 $829
Fast/Wide 16BIT SCSI 2 accelerator card for Apple's Nubus based computers. Supports fast/wide SCSI 2 (16 Bit) transfer rates up to 20MB/sec. and fast SCSI 2 (8 Bit) transfer rates up to 10 MB/sec. Full 16 Bit wide support for the latest drives and disk arrays. Fully compatible with all existing SCSI 1 drives. Formatting software is included.5 Year Warranty.

New! FWB JackHammer $455
Fast/Wide 16BIT SCSI 2 accelerator card for Apple's Nubus based computers. Supports fast/wide SCSI 2 (16 Bit) transfer rates up to 20MB/sec. and fast SCSI 2 (8 Bit) transfer rates up to 10 MB/sec. Full 16 Bit wide support for the latest drives and disk arrays.

New! FWB PCI JackHammer $385
Single channel RISC based PCI to Fast/Wide SCSI 3 accelerator card for Apple's PCI based computers. Ideal solution for your audio, video, prepress, and real time applications. Transfer rates up to 20MB/sec.Formatting software included.5 year warranty. Call for Disk Array Solutions! Also variable in Dual Channel.

REMUS Disk Array RaidLevel 0 - 5 $Call

MICROPOLIS

Capacity			Int.	Ext
2.1 GB • *Also Available in Fast & Wide SCSI 2*			595	655
Fast SCSI 2 8 ms Seek	7200 RPM	512K Buffer	5 Year Warranty	
4.3 GB • *Also Available in Fast & Wide SCSI 2*			995	1055
Fast SCSI 2 8 ms Seek	7200 RPM	512K Buffer	5 Year Warranty	
9.0 GB • *Also Available in Fast & Wide SCSI 2*			1935	2035
Fast SCSI 2 11 ms Seek	5400 RPM	512K Buffer	5 Year Warranty	

GOLD Series AV Drives *Recommended most for AV work*

2.1 GB • *Also Available in Fast & Wide SCSI 2*			675	735
Fast SCSI 2 8.5 ms Seek	7200 RPM	512K Buffer	5 Year Warranty	
4.3 GB • *Also Available in Fast & Wide SCSI 2*			1070	1130
Fast SCSI 2 8.5 ms Seek	7200 RPM	512K Buffer	5 Year Warranty	
9.0 GB • *Also Available in Fast & Wide SCSI 2*			2035	2135
Fast SCSI 2 11ms Seek	5400 RPM	512K Buffer	5 Year Warranty	

All Micropolis hard drives are covered by a 5 year advance replacement warranty. If at anytime during the warranty period your drive should fail it can be replaced in 24 hours. NO WAITING FOR REPAIRS!

CD ROM & CD WRITERS

4x Pioneer CD ROM	$189
150 MS seek 256 K Cache Tray Design	
4 x 6 Disk Pioneer CD ROM Changer	$455
4x Toshiba CD ROM	$235
150 MS seek	
6x Toshiba CD ROM	$435
102 MS seek256 K Cache	
2x Yamaha CDE 1020	$1175
2x CD Writer• 4x CD ROM	
4 x Yamaha CDE 100	$2675
4 x CD writer•Multisession•Selectable Speed	

Prices are external and include all cables and software for a PLUG & PLAY Solution.

Tape Backup Drives

Retrospect 3.0 and 1 tape included with all ProDirect tape drives.

HEWLETT PACKARD

Capacity	Model	Media	Int.	Ext.
2.0 GB	35470	4mm	$925	$985
3-5 GB	35480	4mm	995	1055
4-8 GB	1533A	4mm	1235	1295
24-60 GB	1553A		3195	3295
Auto Tape Loader				

CONNER

Capacity	Model	Media	Int.	Ext.
2-4 GB	CTD4004	4mm	739	779
4- 8GB	CTD8000	4mm	939	989
20-50 GB	4586		2095	2195
Auto Tape Loader				

Exabyte

Capacity	Model	Media	Int.	Ext.
2-5 GB	8205XL	8mm	$1395	$1485
7-14 GB	8505XL	8mm	2055	2115

SyQuest TECHNOLOGY

DRIVES			CARTRIDGES	
Capacity	Model	External	Capacity	Price
88 MB	SQ5110C	$345	44 MB	$40
135MB	SQEZ135	225	88 MB	45
200 MB	SQ5200	395	135 MB	19
270 MB	SQ3270	405	200 MB	70

CALL FOR THE BEST PRICES ON ALL MAC MEMORY!

ProDirect

800-524-9952

8:00am - 7:00pm (CST) Mon.-Fri.
10:00 am - 3:00 Saturday

VISA · DISCOVER NOVUS · AMERICAN EXPRESS Cards · MasterCard

NEVER A SURCHARGE!
****NO SALES TAX!***

Fax24hoursaday612-941-1109
International orders call 612-941-1805
In Minnesota call 612-941-1805

All prices are subject to change without notice. Returned products are subject to a restocking fee. International customers pay all shipping charges. All shipping charges are non-refundable. To return merchandise call for an RMA number. All RMAs must be returned within 10 business days of issuance. Customers are responsible for all returned product shipping charges.

1-800-258-2622 CLUBMAC 1-800-258-2622 1-800-CLUBMAC 1-800-258-2622

$259
Internal Fireball C109 1202
Quantum TRAILBLAZER 850MB
FIREBALL 1GB
12ms Access Time
14ms Access Time
Internal TrailBlazer C109 1206
$199
BEST BUY

$1099
Quantum ATLAS 4.3GB
7200 RPM 1024K CACHE
Internal Atlas C109 1122
BEST BUY

$349*
ClubMac 200MB Removable
FEATURING SyQuest REMOVABLE TECHNOLOGY
200MB
C104 1801
*Cartridge sold separately.

$219
S198 2001
EZ135 Drive
FEATURING SyQuest REMOVABLE TECHNOLOGY
135MB
Features:
135MB Capacity
SCSI Interface
13.5ms access
TWO Year Warranty

$179
C104 1500
ClubMac 4X
Features:
600KB/sec data transfer
190ms avg access time
Caddy-less design

$339
N024 1070
NEC MultiSpin 4Xc 7 Disc Changer
Load 7 Discs at a time!

Source Code 65096
ClubMac
1-800-258-2622

CLUBMAC HARD DRIVES

Quantum

		Internal/External
850MB TrailBlazer	C109 1206/C109 1207	$199/$259
1080MB Fireball	C109 1202/C109 1203	$259/$319
1280MB Fireball	C109 2232/C109 2233	$299/$359
2200MB Capella	C109 1213/C109 1212	$669/$729
2150MB Atlas	C109 1112/C109 1111	$739/$799
4300MB Atlas BEST BUY	C109 1122/C109 1121	$1099/$1159

Seagate

1.0GB Hawk 2 LP 1080N	C109 2274/C109 2235	$269/$329
4.3GB Hawk 4 15230N	C109 2212/C109 2113	$999/$1059
2.5GB Barracuda 2 LP 32550N	C109 2203/C109 2109	$769/$829
4.3GB Barracuda 4 15150N	C109 2207/C109 2106	$1259/$1319
5.25" Full Height		
9.1GB Elite-9 410800N	C109 2231/C109 2110	$2199/$2299

CLUBMAC 2.5" DRIVES

Quantum

		Internal/External
810MB Europa IDE*	C109 1022	$429 Internal
1080MB Europa IDE*	C109 1023	$475 Internal

*Compatible with PowerBook 150 and 5300 series only.

CLUBMAC FAST AND WIDE DRIVES

Seagate

		Internal/External
2.1GB Barracuda 2LP ST32150W	C109 2214/C109 2215	$849/$949
4.3GB Barracuda 4 ST15150W	C109 2206/C109 2208	$1329/$1429
9.1GB Elite 9 ST410800W	C109 2220/C109 2222	$2269/$2389

Quantum

2.2GB Capella VP32210SW	C109 2219/C109 2217	$699/$799
4.3GB Grand Prix XP34301SW	C109 2216/C109 2218	$999/$1059

Fast and Wide Controllers

Adaptec

A024 1006	PowerDomain AHA 2940W SCSI Accelerator	$299
A029 1001	Adaptec Remus 1.3 (Raid Levels 1, 4, 5) (Software)	$439

FWB incorporated

F094 1033	SCSI JackHammer PCI	$389
F094 1002	SCSI JackHammer NuBus	$459

QLogic

Q010 1008	Fast!SCSI MAC PCI-N for Fast SCSI-2 (10 MB/sec) connectivity	$229
Q010 1009	Fast!SCSI MAC PCI-W for Fast/Wide SCSI (20 MB/sec) connectivity	$295
Q010 1010	Fast!SCSI MAC PCI-D for Fast/Wide SCSI where longer I/O cables required	$449

CD-ROM READERS

NEC

		Access time	Trans Rate	
N024 1062	MultiSpin 6Xe CD-ROM Reader	150ms	900k/sec.	$479
N024 1070	MultiSpin 4Xc 7 Disc Changer	350ms	600k/sec.	$339
N024 1011	MultiSpin 3Xp plus Portable CD-ROM	240ms	500k/sec.	$349

ClubMac

		Access time	Trans Rate	
C109 9555	ClubMac Six-Speed CD-ROM Drive	145ms	900k/sec.	$369
C104 1500	ClubMac Quad-Speed CD-ROM Drive	140ms	600k/sec.	$179
C104 1400	ClubMac Classic 2X CD-ROM Drive	250ms	300k/sec	$99
C104 1501	ClubMac Dual-Speed CD-ROM Drive	350ms	300k/sec.	$88.88

Call Toll Free
1-800-258-2622
for a FREE Subscription to the ClubMac Catalog!

REMOVABLE DRIVES

ClubMac / SyQuest

C104 1801	ClubMac 200MB 5.25" Removable*	$349
C104 1800	ClubMac 88MB 5.25" Removable* BEST BUY	$199
C104 1802	ClubMac 270MB 3.5" Removable*	$349
C104 1803	ClubMac 105MB 3.5" Removable*	$149
S198 2001	SyQuest EZ135 135MB 3.5" Removable	$219

*Cartridge not included

SyQuest Media BEST BUY

Part Number	Media	Qty 1	Qty 10	Qty 20
S198 1010	44MB	$40ea	$39.50ea	$39ea
S198 1011	88MB	$44ea	$43.50ea	$43ea
S198 1012	200MB	$69ea	$68ea	$67ea
S198 1013	105MB	$35ea	$34.50ea	$34ea
S198 1014	270MB	$57ea	$56ea	$55ea
S198 2010	EZ135MB	$23ea	$22.50ea	$22ea

iomega

I044 1010	Zip Drive with One 100MB Cartridge	$199.99
I040 1006	Zip Cartridge (100MB)	$19.99
I040 1011	Zip Cartridge (3 pack)	$49.95
I040 1010	Zip Cartridge (10 pack)	$149.95

TAPE BACKUP

ClubMac

Shipped with Retrospect 3.0

C109 2042	ClubMac 2-4GB SCSI MiniCartridge Drive (Cartridge not included)	$489
C109 5039	ClubMac 2.0GB ThunderDAT Drive	$749
C109 5000	ClubMac 4-8GB DDS-2 DAT Drive	$899
C109 4301	ClubMac 4-8GB DDS-2 SuperDAT Drive	$1059
C109 1236	ClubMac 40GB DLT Subsystem DLT 4000	$5499
S100 1043	Sony QW3080XLF QIC/WIDE 2-4GB Cartridge	$29
V010 1018	Verbatim 90M 4mm DAT Cartridge 2-4GB	$9
V010 1043	Verbatim 120M 4mm DAT Cartridge 4-8GB	$20
Q034 1022	1/2 inch media for DLT 4000	$99

OPTICAL DRIVES

ClubMac

C109 5022	ClubMac 5.25" Olympus 1.3GB Optical w/1.3GB Cartridge	$1379
C109 5020	ClubMac 3.5" Olympus 230MB Optical w/230MB Cartridge	$459
V010 1021	Verbatim 1.3GB Optical Cartridge 1024KB	$59
V010 1013	Verbatim 230MB Formatted Optical Cartridge	$24

TORAY Optical Storage Solutions

T140 1001	TORAY Phasewriter DUAL™ PD 4XCD/650MB Optical	$649
T140 2001	TORAY PDM-650 Media (ZCAV 650MB)	$59

Pinnacle Micro

P074 1005	Apex 4.6GB Optical w/One Cartridge	$1589
P074 1006	Apex 4.6GB 1024K Media	$189

CD RECORDABLE DRIVES

Microboards of America

M274 1002	PlayWrite 2X 2000 CDR w/Gear Multimedia	$1189
M274 1004	PlayWrite 4X 4000 CDR w/Gear Multimedia	$1899

YAMAHA®

Y010 1002	Yamaha 4X CD Recorder w/Toast CD Mastering software	$1829

Pinnacle Micro

P074 1001	RCD-1000 2X Recordable CD System w/ Toast software	$1429
P074 1008	RCD-5020 2X Recordable CD System w/ Pinnacle software	$1249

Verbatim

V010 1022	74 Min Recordable CD Disks 650MB	$8

7 Hammond, Irvine CA 92718

DISCOVER NOVUS VISA MasterCard AMERICAN EXPRESS Cards

NO SURCHARGE!

- ClubMac hard drives include all cables, cords, leds, and brackets necessary for use with the Macintosh you specify. ClubMac formats all hard drives and installs Apple System 7.1 software, Charismac Anubis Driver, and PowerMerge LE.
- External drives include a Double Shielded, twisted pair 25-50 SCSI cable.
- ClubMac honors all original equipment manufacturers warranties. ClubMac will repair or replace drives at it's discretion. Drives returned within first 30 days of purchase are replaced with a new unit.
- All ClubMac hard drives include a 30 day money back guarantee. Your risk is the cost of shipping.

WARRANTIES: All items manufactured by ClubMac are returned to ClubMac for warranty repair. All other items carry manufacturer's warranty. MONEY BACK GUARANTEE: All products manufactured by ClubMac carry a 30 day money back guarantee. ClubMac extends all other manufacturers' return policies to its customers. Non-ClubMac products carry 30 day money back guarantee when specified. RETURNS: Call for RMA number! Any product that is returned WITHOUT an RMA number will be refused. ALL PRODUCT INFORMATION AND PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE. NOT RESPONSIBLE FOR TYPOGRAPHICAL ERRORS.

ClubMac®

Carries the full line of Apple products.

Authorized Catalog Reseller

HOURS A DAY 24 NOW OPEN 7 DAYS A WEEK

MONITORS

radius

R016 1030	Radius PrecisionView 17 Display	$979
R016 1031	Radius PressView 17•SR Display System	$1999
R016 1009	Radius Intellicolor Display/20e	$1799
R016 1032	Radius PrecisionView 21Display	$2299
R016 1034	Radius PressView 21•SR Display System	$3149

NEC

N026 1031	NEC 15" MultiSync XV15+	$469
N026 1032	NEC 17" MultiSync XV17+	$799
N026 1009	NEC 17" MultiSync XP17	$1049
N026 1010	NEC 21" MultiSync XE21	$1779
N026 1011	NEC 21" MultiSync XP21	$2159

SONY

S106 1021	Sony Multiscan Trinitron 15SX-1	$445
S106 1017	Sony Multiscan Trinitron 15SF-2	$515
S106 1018	Sony Multiscan Trinitron 17SF-2	$915
S106 1019	Sony Multiscan Trinitron 17SE-2T	$1095
S106 1020	Sony Multiscan Trinitron 20SF-2	$1855

Portrait Display Labs

P026 1003	Portrait/Pivot 1700 .26 Dot Pitch	$1049
P026 1004	Portrait/Pivot 1700 .28 Dot Pitch	$989

MAG INNOVISION

M156 1004	MagInnovision DX15T Technitron w/Trinitron tube	$449
M156 1005	MagInnovision DX17T Technitron w/Trinitron tube	$799

PRINTERS

HEWLETT PACKARD

H047 1030	HP LaserJet 5MP Laser Printer	$1045
H047 1039	HP DeskWriter 600 InkJet Printer	$249
H047 1033	HP DeskWriter 660C Inkjet Printer	$399
H047 1041	HP DeskJet 850C InkJet Printer	$515
H047 1042	HP DeskJet 1600CM/PS PostScript Printer	$1985
H047 1061	HP DeskJet 340CM w/Color kit & Mac adapter	$339

EPSON

E047 1018	Epson Stylus Color II	$449
E047 1019	Epson Stylus Color Pro	$599
E047 1022	Epson Stylus Pro XL	$1799

NEC

N027 1001	NEC SilentWriter Model 640	$399
N027 1006	NEC SuperScript 3000M Color Dye-Sub	$399

SCANNERS

EPSON

E045 1003	Epson ES-1200C Pro-MAC Color Scanner	$1179
E045 1013	Epson ES-1000C MAC Scanner	$735

AGFA

A055 1011	Agfa StudioScan IIsi	$939
A055 1001	Agfa Arcus II	$2195

HEWLETT PACKARD

H045 1013	HP ScanJet 4s Personal Scanner	$299
H045 1009	HP ScanJet 4c Color/GS Scanner	$949

MICROTEK

M150 1006	Microtek Scanmaker III	$1989
M150 1026	Microtek Scanmaker E3	$399

UMAX

U010 1044	Umax PowerLook Pro w/ Transparency Adapter	$1949
U010 1053	Umax Vista-S8 LE w/ Transparency Adapter	$799
U010 1038	Umax Vista-S8 Pro	$769
U010 1010	Umax Vista-S6 LE	$559

GRAPHIC CARDS

radius

R013 1059	Radius Thunder IV GX 1600	$1989
R013 1061	Radius Thunder IV GX 1152	$1589
R013 1069	Radius PrecisionColor 8/1600 PCI Card	$469
R013 1070	Radius Thunder 30/1152 PCI Card	$799
R013 1071	Radius Thunder 30/1600 PCI Card	$1189
R013 1072	Radius ThunderColor 30/1152 PCI Card	$1569
R013 1073	Radius ThunderColor 30/1600 PCI Card	$1999
R013 1018	Radius VideoVision Studio 2.5.1	$2399
R013 1077	Radius Telecast Upgrade	$3429
R013 1026	Radius Spigot Power AV	$599

ATI TECHNOLOGIES INC.

A143 1010	ATI XCLAIMGA 2MB PCI Graphics Card	$359
A143 1009	ATI XCLAIMGA 4MB PCI Graphics Card	$469

TRUEVISION

T043 1001	Targa 2000 (PCI Mac)	$4295

INTEGRATED MICRO SOLUTIONS

I143 1001	IMS Twin Turbo 128M 4MB PCI	$579

NUMBER NINE VISUAL TECHNOLOGY

Imagine 128 True 128 Bit PCI

N080 1003	4MB	$729
N080 1002	8MB	$1169

GRAPHICS TABLETS

WACOM

BEST BUY w/Painter 4.0

W010 1026	ArtPad II 4x5 with Erasing Pen	$139	W010 1033	$369
W010 1028	ArtZ II 6x8 with Erasing Pen	$298	W010 1034	$528
W010 1029	ArtZ II 12x12 with Erasing Pen	$425	W010 1035	$655
W010 1030	ArtZ II 12x18 with Erasing Pen	$695	W010 1036	$925

ACCELERATORS

DAYSTAR DIGITAL

D040 1018	DayStar Turbo 040	$599
D040 1057	DayStar 100MHZ PowerCard 601	$969
D040 1043	DayStar 100MHZ PowerPro 601	$1199
D040 1039	DayStar 66MHZ Turbo 601 for IIci	CALL
D040 1050	DayStar 100MHZ Turbo 601 for IIsi, IIci, Performa, IIvx, IIvi	$1139

MODEMS

FAST MAC

B030 1007	Fast Mac V.34 28.8 Fax/Data Modem	$139

BEST DATA Merging Multimedia & Communications

B020 1001	Best Data 2834FLXMAC 28.8 V.34 External Mac	$155
B020 1003	Best Data 2834VLXMAC 28.8 V.34 External Mac w/Voice Mail	$188

GLOBAL VILLAGE COMMUNICATION

G050 1006	TelePort Gold II	$109
G050 1016	TelePort Platinum	$199
G050 1002	PowerPort Mercury for PB 5xx	$325
G050 1019	PCMCIA 28.8KBPS Fax/Data/10BaseT Ethernet	$499
G050 1020	PowerPort Platinum PCMCIA Card 28.8kbps Fax/Data	$339

Megahertz

M070 1021	28.8Kbps PC Card modem w/XJACK®	$295
M070 1022	14.4Kbps PC Card modem w/XJACK®	$135

TDK®

T210 1001	28.8Kbps V.34 Data/Fax PCMCIA modem Card	$249

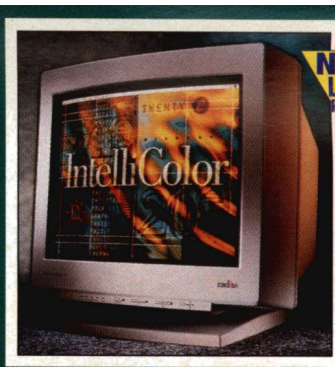
NETWORKING

ASANTÉ

A120 1010	10BaseT FriendlyNet Media Adapter FN10TA	$39.95
A120 1023	Thick/10BaseT Hub MCiNB-10T	$109
A120 1003	10BaseT Hub (8 RJ45 ports, 1 AUI & 1 BNC) 10THUB/8	$149
A120 1062	10BaseT Hub (12 RJ45 ports, 1 AUI & 1 BNC) 10THUB/12	$149
A120 1032	ASANTÉ Micro ASANTÉPRINT 10BT	$285

Dayna

D300 1039	DaynaPort CS-T 10BT Comm Slot Performa	$79
D300 1029	DaynaStar MiniHub 8 RJ45 10BT	$109



NEW LOW PRICE

$1799

radius IntelliColor 20e

COMPATIBLE WITH POWER MACINTOSH

R016 1009

WACOM

$298

ARTZ II 6" X 8" GRAPHICS TABLET

Edit images, paint, draw and develop your technique to create stunning art with a new Wacom Graphics tablet!

W010 1028

EPSON

$1179

ES-1200C Scanner

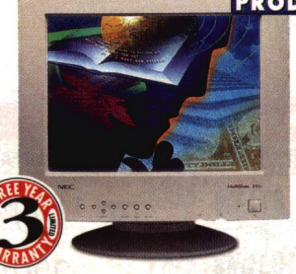
High detailed 4800dpi, 30-bit color scanning.

E045 1003

NEC

NEW PRODUCT

$799



MultiSync XV17+

17" Color Display

N026 1032

VISIONEER

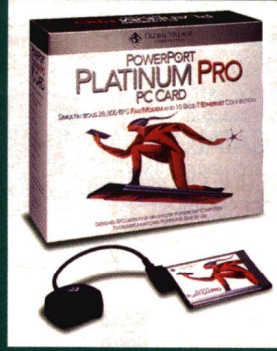
$299

PaperPort Vx

The Easiest way to get paper into your Mac.

MACWORLD MW ★★★★★ March 1996

V029 1008



5 Year Manufacturer's Warranty

$499

G050 1019

GLOBAL VILLAGE COMMUNICATION

PowerPort Platinum Pro

28.8 & Ethernet

Source Code 65096

ClubMac®

1-800-258-2622

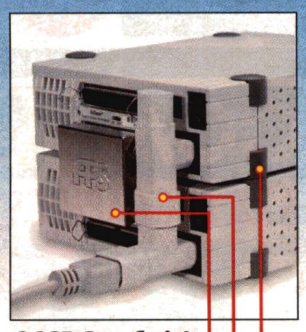
General Sales	24 Hours a Day, 7 Days a Week (800) 258-2622	Customer Service	M - F 7am - 5pm PST (800) 551-6398
Inquiries/International Sales	M - F 5am - 9pm PST (714) 768-8130	Technical Support	M - F 7am - 5pm PST (800) 854-6227
Corporate/Education Sales	M - F 5am - 5pm PST (800) 258-2621	24-Hour Fax	(714) 768-9354

1-800-258-2622 1-800-CLUBMAC 1-800-258-2622

GREAT PRODUCTS... PRICELESS SUPPORT

APS Technologies

2GB - GREAT PRICE!



SCSI Conduit®

SCSI "C" Connector
2-PowerT Connectors
4-stacking feet

only $29.95

Mini SCSI Link (12" cable) $19.95

JUST $499.95 Internal configuration

APS I 2160 IBM.

- ✔ 8ms average seek
- ✔ Over 2060MB Formatted capacity
- ✔ The best value for performance and capacity
- ✔ 5-year warranty

With high-performance, superior reliability, and exceptional value, the new APS I 2160 is a dynamite choice as your next workstation or server drive. Its 2063MB formatted capacity, IBM MR head technology and 800,000 hour MTBF fit the rigorous demands of many applications ranging from database and spreadsheet use to desktop publishing and imaging.

1GB PRICE LEADER! $229.95 Internal configuration

APS I 1080 IBM.

- ✔ Over 1GB capacity with Fast SCSI-2 interface
- ✔ IBM Magneto-Resistive (MR) head technology
- ✔ Transfer rate 3.32 MB/sec. write, 2.67MB/sec. read
- ✔ Low power requirements
- ✔ 5400 rpm mechanism
- ✔ 3-year warranty

An exceptional value, the high performance, low-power APS I 1080 delivers 1034MB of formatted capacity and sustained transfer rates of 3.32MB per second (read) and 3.67MB per second (write). A three-year warranty backs the APS I 1080, and it is rated at 350,000 hours MTBF.

4GB BARGAIN $899.95 Internal configuration

APS ST 4200 Seagate

- ✔ Excellent combination of capacity, reliability and value
- ✔ Sustained transfer rates of up to 3.7MB/sec.
- ✔ 5400rpm mechanism
- ✔ 800,000 hour MTBF
- ✔ 5-year warranty

MacUser/ZD LABS The new APS ST 4200 is our lowest priced 4GB drive ever. It incorporates Seagate's 5400 rpm Hawk mechanism with a 512K cache buffer, delivering sustained data transfer rates of up to 3.7MB per second. This reliable drive is backed by a five-year warranty and boasts an 800,000 hour MTBF.

APS SCSI DRIVES

Model	Capacity/Features	Awards	Internal	SR2000
APS Q 840 Quantum 840 Trailblazer	**811MB** 4500 rpm	MacUser/ZD LABS ★★★★	$199.95	$299.95
APS I 1080 IBM DPES 31080	**1034MB** 5400 rpm		229.95	329.95
APS Q 1080 Quantum 1080 Fireball	**1042MB** 5400 rpm	◆◆◆◆ MacWEEK; MacUser/ZD LABS ★★★★	259.95	339.95
APS Q 1280 Quantum Fireball II 1280	**1222MB** 5400 rpm		299.95	399.95
APS I 2160 IBM Ultrastar ES	**2063MB** 5400 rpm		499.95	599.95
APS MS 2000 Micropolis 4421	**1955MB** 5400 rpm		549.95	649.95
APS ST 4200 Seagate ST 15230N Hawk	**4094MB** 5400 rpm	MacUser/ZD LABS ★★★★	899.95	999.95

APS HIGH-PERFORMANCE SCSI DRIVES

Model	Capacity/Features	Awards	Internal	SR2000
APS MS 2.0 Micropolis 4221	**1955MB** 7200 rpm	MacUser/ZD LABS ★★★½	$599.95	$699.95
APS Q 2.0 Quantum Atlas XP32150	**2050MB** 7200 rpm	MacUser/ZD LABS ★★★★	799.95	899.95
APS ST 2.0 Seagate ST 32550N	**2047MB** 7200 rpm		749.95 NEW LOWER PRICE!	849.95
APS MS 4.0 Micropolis 3243	**4064MB** 7200 rpm	MacUser/ZD LABS ★★★★	999.95	1099.95
APS Q 4.0 Quantum Atlas XP34300	**4101MB** 7200 rpm	◆◆◆◆ MacWEEK; MacUser/ZD LABS ★★★★½	1199.95	1299.95
APS ST 4.0 Seagate ST 15150N	**4094MB** 7200 rpm	MacUser/ZD LABS ★★★½	1199.95	1299.95
APS MS 9.0 Micropolis 1991	**8669MB** 5400 rpm		1999.95	2199.95
APS ST 9.0 Seagate ST410800N	**8669MB** 5400 rpm		2199.95	2399.95

APS FAST/WIDE SCSI DRIVES

Model	Capacity/Features	Awards	Internal	SR2000
APS MS 2.0W Micropolis 4221W	**1955MB** 7200 rpm		$699.95	$799.95
APS Q 2.0W Quantum Atlas XP32150W	**2050MB** 7200 rpm		899.95	999.95
APS MS 4.0W Micropolis 3243W	**4064MB** 7200 rpm		1099.95	1199.95
APS Q 4.0W Quantum Atlas XP34300W	**4101MB** 7200 rpm		1299.95	1399.95

APS SCSI POWERBOOK DRIVES

Model	Capacity/Features	Awards	Internal
APS I 1.2 IBM Travelstar XP	**1160MB** 4900 rpm		$699.95

APS AUDIO/VIDEO SCSI DRIVES

Model	Capacity/Features	Awards	Internal	SR2000
APS MS 2.0AV Micropolis 4221AV	**1955MB** 7200 rpm		$699.95	$799.95
APS MS 4.0AV Micropolis 3243AV	**4064MB** 7200 rpm		1099.95	1199.95
APS MS9.0AV Micropolis 1991AV	**8669MB** 5400 rpm	MacUser/ZD LABS ★★★★	2099.95	2299.95

APS IDE POWERBOOK DRIVES

Model	Capacity/Features	Awards	Internal
APS Q 810 Quantum Europa	**778MB** 3800 rpm, Fast ATA-2		$399.95
APS Q 1.08 Quantum Europa	**1037MB** 3800 rpm, Fast ATA-2	NEW LOWER PRICE!	474.95

CALL FOR YOUR **FREE** EARLY SPRING 1996 CATALOG

FEATURING OUR COMPLETE LINE OF APS DRIVES, SUPPLIES & ACCESSORIES

To receive an automated fax listing of all APS documents, call 800-374-5802 from any touch-tone telephone

Then call 816-920-4150 from a fax machine with a handset or fax modem and follow the instructions.

APS TECHNOLOGIES

FASTEST DAT DRIVE EVER!

Call us 24 hours a day, 7 days a week

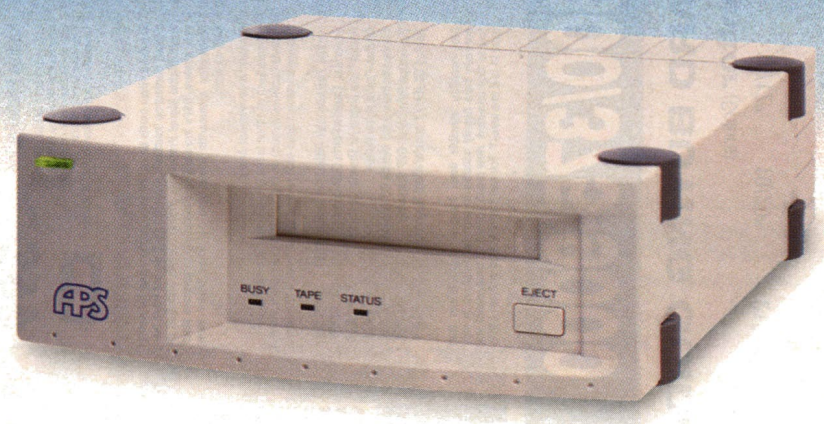
CUT YOUR BACKUP TIME IN HALF! $1099.95 External configuration

APS HyperDAT Pro

- ✔ The fastest DDS-2 tape drive available!
- ✔ Backup at up to 48MB per minute! Cut your backup time in half!
- ✔ Up to 8GB of storage per 120m DAT tape
- ✔ The new performance standard for network DAT backup

If you've been searching for a way to backup in less time, this is the drive for you. The new APS HyperDAT PRO is perfect for time-critical applications. Setting the standard for DDS-2 DAT backup with real-world backup speeds as high as 45MB per minute. The drive uses standard 120m DDS-2 tapes with a native capacity of 4GB and up to 8GB with compression. Its built-in hardware is compatible with all DDS and DDS-DC compatible tapes and mechanisms

120M DAT Tape $21.95 ea.



SAVE ON NEW TECHNOLOGY

CD-ROM & OPTICAL IN ONE DRIVE

APS PD4

$499.95 External configuration

- ✔ Combines removable optical storage and backup with CD-ROM in one device!
- ✔ Accepts 650MB rewritable optical cartridges and CD-ROMs interchangeably

Limited quantities, order now!

The new APS PD4 is the most versatile drive available for your Mac. Combining a fast 4X CD-ROM player with re-writable 650MB optical cartridge drive, the APS PD4 saves a SCSI address while performing these two important desktop functions.

FASTEST 2GB DAT BACKUP DRIVE

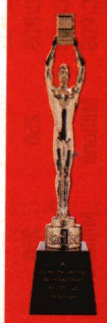
APS DAT

$699.95 External configuration

- ✔ Twice the speed of previous DAT – up to 19MB per minute
- ✔ Up to 2GB native capacity on 90m DAT tapes
- ✔ Includes the latest 3.0 Retrospect backup software – Free

The new APS DAT packs up to 2GB of uncompressed data on a 90m DAT tape at a speedy 19MB per minute. That's twice as fast as a standard DAT drive! You won't sacrifice speed or capacity when you backup to an APS DAT.

MacWorld Magazine World Class Award



MacUser Editor's Choice Award

Consultants Choice Award

APS SYQUEST DRIVES

Model	Capacity/Feature	Awards	Internal	SR2000
EZ135 An affordable alternative to a new hard drive...from SyQuest	135MB		N/A	$229.95
APS SQ 3270 Our best performing removable cartridge drive	255MB	MacUser LABS ★★★★½	N/A	349.95*
APS SQ 5200 Ultimate storage flexibility	194MB	MacWEEK MacUser LABS ★★★★½	N/A	389.95

**While supplies last! CALL NOW!*

APS CD-ROM DRIVES

Model	Features	Awards	Internal	SR2000
APS PD4CD-ROM/Removable Optical 600MB optical storage with 4X CD-ROM in one device			N/A	$499.95*
APS T 3701 Sustained data transfer rates up to 1000KB per second	6.7X-SPEED		$299.95 NEW LOWER PRICE	329.95
APS CD-R FREE TOAST CD-ROM Pro CD recording software ($500 value)	Recordable CD-ROM		N/A	999.95*

**While supplies last! CALL NOW!*

3M PD650 optical cartridge **Special $45.95 ea.**

FUJI MEDIA SPECIAL — Buy any APS DAT drive, get an additional 10% off 90m tapes

	Price	10% disc.	Mail-in rebate	Final price
90m DAT 3-pack w/free cleaning cartridge	$29.95	$26.96		$26.96
90m DAT 5-pack	$45.95	$41.35	–$15.00	$26.36

Offer expires 3/19/96.

APS QIC & DAT TAPE BACKUP DRIVES

Model	Capacity/Features	Awards	Internal	SR2000
APS HyperQIC™ QIC 3080 Mechanism	2GB	MacWEEK ★★★★ MacUser LABS ★★★½	N/A	$449.95
APS DAT DDS-2 Non-Compression Mechanism	2GB		$649.95	699.95
APS HyperDAT DDS-2 Compression Mechanism	8GB		849.95	899.95
APS HyperDAT Pro DDS-2 High-Speed Mechanism	8GB		1049.95	1099.95
APS DATLoader600 Ideal for unattended large network backups	48GB		N/A	2499.95

APS MO DRIVES

Model	Capacity/Features	Awards	SR2000
APS 230MB MO Olympus mechanism	4500 rpm drive	MacUser LABS ★★★★	$449.95
APS 1.3GB MO Sony SMO F-531 mechanism	4MB cache		1699.95
OPTICAL JUKEBOX, SINGLE DRIVE Sony mechanism	Up to 26GB of reliable MO storage		7799.95

- 30-day money-back guarantee on all APS brand products. Your risk is the cost of shipping.
- Drive-for-Drive Repair or Replacement Warranty. The warranty length is denoted by the superscripted number next to each drive model. APS will, at its discretion, replace or repair products found to be defective according to the terms of the product's warranty.
- Refused orders subject to 20% restocking fee.
- Listed capacities are formatted
- Actual data compression and tape capacity vary greatly depending on the type of data recorded, other system parameters and environment.
- Internal hard drives include brackets, cables, cords and LEDs required for operation with the specified Macintosh where applicable. External SCSI-2 drives come with a premium SCSI cable, power cord and user guide.
- All hard drives from APS Technologies come preformatted with Apple's System 7.0.1 software, and APS Technologies' APS PowerTools SCSI formatter/hard disk partitioner. You may need to install system software appropriate to your machine before use.
- Prices and specifications are subject to change without notice. Not responsible for typographical errors.
- Copyright © 1996 APS Technologies

APS DLT TAPE BACKUP DRIVES

Model	Capacity/Features	Awards	SR2000
APS DLT30 Digital Linear Tape Mechanism	30GB	MACUSER EDITORS' CHOICE AWARD 1995 FINALIST	$3399.95
APS DLT40 Digital Linear Tape Mechanism	40GB		5499.95
APS DLT4500 Loader Digital Linear Tape Mechanism	200GB		9999.95
APS DLT4700 Loader Digital Linear Tape Mechanism	280GB		11499.95

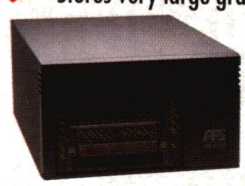
All APS tape drives include Retrospect® by Dantz®

Fuji 90m DAT tape 3-pack w/free cleaning cartridge **Special $26.96** with DAT drive purchase

APS DLT30 & DLT40

IN STOCK!

- ✔ Dual-linear recording for maximum throughput
- ✔ Stores very large graphic files or databases on a single tape



Earth-shattering speed and capacity. That's what the APS DLT drives are all about. With real-life backup speeds of up to 100MB per minute, as tested in our labs, and compressed capacities of up to 40GB on a single tape, the APS DLT series of drives is the ultimate solution for anyone who needs to backup huge amounts of data quickly. They're perfect for graphics professionals needing to backup digital video, multimedia files and large amounts of page layout and design files. They're also perfect for near-line archiving and backups for network administrators operating huge servers with large data files. They are even better when you add a loader. *See line listings above for prices.*

VISA MasterCard DISCOVER NOVUS AMERICAN EXPRESS TeleCheck

Visit our Web Page at http://www.apstech.com/
APS Sales (816) 290-4109

CALL TODAY!

800-677-3294

APS Technologies

REF. CODE: 307009

AWARD WINNING PRODUCTS AT OR BELOW DEALER COST!

DISPLAYS

TWENTY ONE INCH DISPLAYS

21 Inch DiamondTron Monitor
from **$1999***
- Rated Superior to Trinitron
- Largest Aperture Grille monitor available
- Up to 1600x1200 on Macs and PCs
- Full Digital Control from Keyboard

Radius SuperMatch 21 TXL	from $1699*
Radius PrecisionView 21	$CALL
Radius PressView 21sr	from $2899*
SuperMac PressView 21 "Editors Choice"	$1999*

Radius PrecisionColor Display 21
$1499* Compare at $2399
- 1600x1200 to 1024x768
- Razor sharp dot pitch
- Best for color accuracy
- Selectable color temperatures

RasterOps SuperScan MC 21	$CALL
Radius Multiview 21	$CALL
Radius 21 inch Grayscale Display	$799

*With qualifying videocard, accelerator, or computer purchase

TWENTY INCH DISPLAYS

TWO PAGES FOR THE COST OF ONE!
Retail $1999 — While Supplies Last! –Your Choice of...

SuperMac SuperMatch 20 PLUS
$999* Best Screen Uniformity!
- Up to 1152x870 resolution
- Advanced Digital Controls
- Non-glare, Dynamic-Focus CRT

Radius PrecisionColor 20v	$1099
Digital 20 inch Display Up to 1280x1024	$1399
RasterOps 20 Multimode	$1299
Radius PrecisionColor 19	$899

Radius IntelliColor Display 20
from **$1499*** Retail $2399
- MacUser, MacWorld, MacWeek Editor's Choice
- 1600x1200 to 640x400

Apple Multiple Scan 20 Display	$CALL
Ikegami 20 inch Grayscale Display	$699
Radius 20 inch Grayscale Display	$699

*With qualifying videocard, accelerator, or computer purchase

SEVENTEEN INCH DISPLAYS

SuperMac/E-Machines T16IIMR
Compare at $1299 — **$599***
- High Grade Studio Trinitron Series
- .25mm multi-resolution • Editors Choice
- 1024x768 to 640x480 resolutions

SuperMatch 17T	$799*
PrecisionColor Display 17	from $899
PrecisionView 17	$CALL
Radius PressView 17sr MPR ★★★★★	$CALL
SuperMac SuperMatch 17	from $499*

*With qualifying videocard, accelerator, or computer purchase

PORTRAIT DISPLAYS

Radius Color Pivot LE
$399* We have cards for SE/30, LC, IIsi, Nubus, and Quadras
* With purchase of video card.

PrecisionColor Pivot	$599
Grayscale Pivot	$399
Radius Full Page Display	$CALL
Apple Portrait Display	$399
Portrait Display Labs 1700	$CALL
E-machines ColorPage 15 with NUBUS card	$499

COLOR MANAGEMENT

SuperMac Display Calibrator	$299
SuperMac Display Calibrator PRO	$499
Radius Mac ProSense Calibrator	$799

VIDEO CARDS

1600x1200 PCI & NUBUS

Radius ThunderColor 30/1152 & 1600	$CALL
IMS Twin Turbo 128M (4MB with MPEG)	$599
Radius PrecisionColor 8/1600	$499
EAsycolor 1600/16	$CALL
Radius Thunder II GX 1360 & 1600	from $999
Radius Thunder IV GX 1360 & 1600	from $1599
Radius Thunder 24/GT (accepts PhotoEngine)	$CALL

21" RESOLUTIONS

Radius PrecisionColor Pro 24X	$699
Thunder 8 "Fastest 8 bit card ever"	$CALL
Thunder 24 (DSP available)	$CALL
Radius LeMans GT	$799
SuperMac Ultra LX*	from $899
RasterOps Horizon 24*	from $999
RasterOps 24XLTV	$1999
RasterOps Prism GT	$CALL
Radius PrecisionColor 8XJ	$499

*DSP Available

20/19" RESOLUTIONS

SuperMac Spectrum 24 Series V	$599
Radius PrecisionColor Pro 24XK	$CALL
SuperMac Futura MX	$499
RasterOps PaintBoard Lightning	$CALL
SuperMac Spectrum 8	$199
PowerView/SuperView for Powerbooks	$199/$299

17/16" RESOLUTIONS

Radius 24 bit video cards	from $199
Radius PrecisionColor Pro 24XP	$CALL
SuperMac Futura SX	$299
RasterOps 24 MX	$399

PHOTOSHOP ACCELERATION

"If you frequently need to retouch large image files in Adobe Photoshop using such filters as Gausian Blur, Shapen, and Emboss, then you need either to have the patience of Mother Teresa or a digital signal processor (DSP) board." –Macworld

Radius PhotoEngine from **$399**
- Four AT&T 3210 66MHz DSPs
- Accelerates Photoshop Filters
- Up to 15x acceleration on all Macs
- MacUser Editor's Choice
- Available in Daughtercard or NUBUS versions

Standard video cards do not provide acceleration for many critical Photoshop functions, because they do not have on-board Digital Signal Processors (DSPs). When installed in your system, DSPs are used by Photoshop to process time consuming commands more than 10-times faster than built-in video.

Greatest Improvement Areas:
- Filters such as those in the Sharpen and Blur submenus
- Mode conversions such as RGB to CMYK color separations
- Image transformations such as rotations, effects, and resizes.

Radius PhotoBooster (NUBUS or Rocket/PDS)	$199
SuperMac ThunderStorm DSP Boards	$299
Radius Color Engine for Thunder 30 Cards	$CALL
Radius PhotoEngine Nubus	$CALL
Adobe Photoshop 2.5 Deluxe CD Edition	$CALL
RasterOps Paintboard DSP Upgrades	$CALL
Radius GX (CMYK acceleration) Upgrades	from $349

Stop wasting valuable time: Imagine using filters that normally take twenty minutes to process finishing in only two to four minutes! How much additional time would you save in just one week? You can't afford to be without DSPs.

PRINTERS

We have purchased excess printer inventories DIRECT from the manufacturer, so you can save over 50-75% on most of our current printers. DO NOT WAIT, as quantities are extremely limited and supplies will NOT last!!

COLOR LASER PRINTERS

Color Laser Printers are the best choice for printing text, graphics and color. They use a similar printing process to monochrome printers and output on standard laser paper, which means your prints will not fade or crease. The cost to add color to your documents is now only a few cents more per page. For a LIMITED TIME ONLY, you can purchase a Color Laser Printer for under $2,000--call now to order!!

QMS Magicolor from **$2999**
- Internal SCSI drive
- Flexible 300 or 600 dpi
- Blazing 33 MHz RISC processor
- PostScript Level 1, 2 and HP/PCL-5
- Only Color Laser Choice for envelopes

QMS ColorScript 1000	$1999
Tektronix 540 Plus	$CALL
Apple Color Laserwriter 12/600PS	$6279
Xerox 4900 series Color Laser	from $5589

TWO PAGE COLOR PRINTERS

11x17 Tabloid Color Printers	from $2999
SuperMac Proof Positive dye sub	$SPECIAL
Fargo Pictura 310 Color Printer	$CALL

- Up to 12"x18" output
- Dual-function dye sub and wax thermal
- Editors Choice

QMS ColorScript 210/230 $CALL
- Up to 11x17" full-bleed output

TABLOID LASERS

QMS 860 Hammerhead 600-1200dpi from **$1999**
- 11 x 17 full bleed
- PostScript Levels 1&2
- 8ppm heavy-duty Canon engine
- Powerful RISC processor

Hewlett-Packard 4mv	$CALL
GCC SelectPress 1200x1200dpi	$4999
22ppm QMS PS2210/2220	$1499/$1699

HOME/OFFICE

360 DPI Color Printer **$199**
Star SJ-144MC
- Full-Color output at crisp, laser-quality 360dpi Printer
- Heat Fusion process avoids ink-jet smear
- 2-year Manufacturer's Warranty
- ADD box of 3 Color Cartridges ($57 value) only $29
  * With purchase of any other item in ad

Hewlett-Packard 5mp	$CALL
Apple Laserwriter Select 360	from $1199
QMS 815/815mr 8ppm, 600dpi	$699/$999
QMS PS 825/825mr 600dpi	$799/$1099
QMS 1060 10ppm, 600dpi	$CALL
QMS PS 1500 15ppm	$1299
QMS PS 1700 17ppm, duplex optional	$1999
Apple OEM Laserwriter 8ppm	$499
Seikosha SP-2400AP dot matrix	$179
Apple Imagewriter/Stylewriter	$CALL
GCC WriteMove/WriteMove II	$149/$249

New and Reconditioned Models of Most Items Available

CPU SPECIALS

POWER MACS

NUBUS POWER MAC SPECIALS*

PowerMac 6100 8/350/CD	from $999
PowerMac 7100 8/700/CD	from $1499
PowerMac 8100 16/1GB/CD	from $2699
Radius 81/110	$CALL

PCI POWER MACS ALL AVAILABLE
*With Qualifying Card And Monitor Purchase
All in stock $CALL for lowest prices

QUADRA BLOWOUT!

Quadra/Centris 610 8/80/CD **$699***
- Powerful '040 processor
- Multi-media ready with internal CD-ROM
- Built-in video supports up to 21" color monitors
- Software bundle with ClarisWorks, CD titles

Add 486DX/66MHz DOS Card only $399

Macintosh Quadra 605/LC475 **$599** CPU only
- NEW CPU, with 4MB RAM and 250MB HD
- Powerful '040 processor
- Radius Full Page Display $899 Complete
- Apple Design Keyboard
- ClarisWorks

Add Radius Card for Display to TV only $99

Quadra 950 8/500, NEW	$1399*
Quadra 840AV 8/500/CD NEW BUILD	$1699*
Quadra 650 4/250/CD	$CALL

*with purchase of any qualifying monitor or video card

MAC II SERIES SYSTEMS

Mac IIsi Color Pivot System **$299** CPU only
- Macintosh IIsi with 5MB RAM/80MB HD
- Radius Color Pivot Display
- Extended 105-key Keyboard $799 Complete
- FREE ClarisWorks!

Add Radius Card for Display to TV only $99

Mac IIcx 15" Color System **$275** CPU only
- Macintosh IIcx with 4MB RAM/80MB HD
- E-machines ColorPage 15" Display
- NUBUS accelerated video
- Extended 105-key Keyboard $849 Complete
- FREE ClarisWorks!

Add MacRecorder to Mac IIcx only $99

Macintosh II 4/40 w/video card installed	$299*
Macintosh IIci 4/80 w/cache card installed	$399*
Macintosh IIfx 4/250 50MHz upgrade available	$499*
Add Apple Cache Card to Macintosh IIci	$39

*with purchase of any qualifying monitor

Mac Plus System w/Keyboard & Mouse	only $149
Macintosh SE30	from $299
ADD an External Modem to any CPU	$49

POWERBOOKS

PowerBook 5300 series	$CALL
PPC Upgraded Color PowerBooks	from $2299
PowerBook 520c	from $1499
PowerBook 190 series	$CALL
PowerBook 160/180	from $999
PowerBook Duo 210/230	from $699
PowerBook Duo 270c/280c	$CALL
Ethernet Dock for Powerbook Duo's	$399*
Apple Duo Docks	from $499*
Add GCC WriteMove II portable printer	$199*

*with purchase of a PowerBook

CPU UPGRADES

Daystar PowerPC and 040 Accelerators	$CALL
Radius Rockets 33MHz to 40MHz	from $399
Stage Two Rocket 40MHz w/FPU	$699
-includes SCSI II Booster and RocketShare	
Rocketshare multiprocessing software	$299
Speed upgrades for all 680X0 and PPCs	$CALL

DIGITAL VIDEO

Video Vision Studio 2.5.1 **$1999***
- 24bit Full-Screen, Full-Motion Video
- Includes Adobe Premiere and VideoFusion
- Breakout bar supports dual input

*with purchase of Studio Array

Video Vision Studio Array **$1999**
- 4GB RAID Customized for Video Vision
- Includes FWB Jackhammer SCSI accelerator

TRUEVISION Targa 2000 PCI/NUBUS	$CALL
RasterOps 24XLTV	$1999
RasterOps 24STV	$999
RasterOps 24MXTV	$CALL
RasterOps MoviePak II JPEG Daughtercard Upgrade	$CALL
Spigot II Tape Now Bundled with Adobe Premiere	$499
Apple PowerMac AV Card	$CALL
VideoSpigot Cards Nubus/LC/IIsi	from $99*
Radius Spigot Power AV	$799

*With purchase of Adobe Premiere

DRIVES

1.0GB OPTICAL FOR THE COST OF 230 MB!
Don't bother building a library of tiny 44, 200 or 230 MB optical and Syquest cartridges. After buying only 10 1.0GB cartridges your savings will pay for this drive.

MAXOPTIX 1.0GB MO from **$599**
- 1MB Cache, 9x more than 230 MB Optical Drive
- Maximum Reliability with 25 year operating life
- Reads 650MB and WORM cartridges

Pinnacle Micro APEX 4.6GB Optical Drive	$CALL
Pinnacle Micro CD-Recorders	from $799
NEC 4x External CD-ROM Multimedia Kit	$249
NEC 3x External CD-ROM Multimedia Kit	$199
Apple or NEC 2x External CD-ROM Multimedia Kit	$179
Fujitsu 1.2GB HD Wide (Ext) w/system	$349
Seagate 2.4GB HD fast & Wide Barracuda (Ext)	$899
Iomega ZIP, JAZ drives	from $199
Apple 250mb HD internal/external	$125/$200
Apple 350mb HD internal/external	$175/$250
Dayna 360K/1.2mb-740K/1.44mb	$499
Exabyte 8mm 5gb tape backup	$999
NEC CDR 72/73/74 CD drive	$99/$199/$299
Apple FDHD auto insert floppy	$199
FWB Jackhammer SCSI accelerator PCI	$399
FWB Jackhammer SCSI accelerator NUBUS	$499
Daystar SCSI PowerCard accelerator NUBUS	$299

COOL STUFF

NETWORKING

WGS 6150 16/500CD/AppleShare	$2499
WGS 8150 16/1GB/CD/DAT/AppleShare	$3999
Apple Token Ring NUBUS cards	from $299
DCA Mac Irma 3270	$499
DCA Irma 3270 for Mac SE	$499
Shiva FastPath 4 Gateway	$999
EtherNet boards for SE, SE/30	$99
Asante & Daystar EtherNet boards for LC's	from $99
Daystar SCSI/Link External Ethernet Adapter	$299
E-machines Colorlink DC/T 8-bit graphics, 10BT ethernet	$199
E-machines Colorlink EX/T 24-bit to 640x480, 10BT ethernet	$299
E-machines Futura II SX/T 24-bit to 832x624, 10BT ethernet	$399
E-machines Colorlink SX/T 24-bit to 1024x768, 10BT ethernet	$499

CARDS & MONITORS

Apple 8•24 GC	$449
RasterOps 104 24bit card for Two Page Displays	$299
RasterOps 24XLi (3MB, expandable to 16MB)	$599
RasterOps 24L with 801	$699
RasterOps 708+ 8bit for 20" monitors	$299
Daystar NUBUS RAM Expansion Card	$199
E-machines T19 Card for SE30/IIsi	$299
E-machines ColorPage 15" monitor & video card	$499
E-machines Big Picture 17" gs monitor & card	$499

CRA Systems, Inc.
300 South 13th St., Waco, TX 76701
Monday thru Friday 9AM to 8PM CST Saturday 10AM–4PM *Sales Dept. Only*
Domestic Sales 800.375.9000 Fax 817.750.9050
Consultants/Dealers 817.754.2120 International Sales 817.754.2120

Prices reflect 2% cash discount. Prices subject to change. Not liable for typographical errors. All shipping charges for COD orders to be secured by credit card. Dealers and consultants call for quantity pricing. We ship anywhere.

Since 1986, CRA Systems has been offering a great selection of new and factory clearance technology products. Most of these items have been offered at or below dealer cost due to volume purchases direct from the manufacturers.

CRA SYSTEMS 800/375-9000 CRA SYSTEMS CRA SYSTEMS 800/375-9000 CRA SYSTEMS

VIDEO CARD BUYING GUIDE - ALL HARD TO FIND CONFIGURATIONS ARE IN STOCK NOW!!

Video Card	Platform	Monitor (Colors) 14/15"	16/17"	19/20"	21"
Radius FPD Card	Mac Plus	Mono	–	–	–
Radius Pivot Card	SE/30	256	–	–	–
Xceed Color 30hr	SE/30	256	256	256	256
Lapis Color 16	SE/30	Thousands	Thousands	256	256
Lapis Color 24	SE/30	Millions	Millions	256	256
Radius Direct Color/gx	IIsi	Millions	–	–	–
SuperMac Spectrum 8	IIsi	256	256	256	256
SuperMac Spectrum 8.24	IIsi	Millions	256	256	256

Video Card	Platform	Monitor (Colors) 14/15"	16/17"	19/20"	21"
Radius FPD Card	Mac SE	Mono	–	–	–
SuperMac Superview	Mac SE	–	–	Mono	–
Radius TPD Interface	Mac SE	–	–	–	Mono
RasterOps 8/LC	LC/PDS	–	–	256	–
SuperMac Spectrum 8	LC/PDS	256	256	256	256
Lapis Color 16 for LC	LC/PDS	Thousands	Thousands	256	256
Micro Conversions 1724	LC/PDS	Millions	Millions	256	256
Lapis Color 24 for LC	LC/PDS	Millions	Millions	256	256

Video Card	Platform	Monitor (Colors) 14/15"	16/17"	19/20"	21"
Double Color SX	Nubus	256	256	16	–
RasterOps 708+	Nubus	256	–	256	–
RasterOps 24L	Nubus	Millions	–	–	–
RasterOps 8/LC	Nubus	–	–	256	–
SuperMac Spectrum 8	Nubus	256	256	256	–
Double Color LX	Nubus	256	256	256	256
Radius Direct Color 24	Nubus	–	–	–	Millions
E-machines Futura MX	Nubus	Millions	Millions	Millions	–

SYEX EXPRESS

Your Source for Digital Desktop Publishing Solutions!

Authorized Catalog Reseller

Radius Monitors

$799

Radius PrecisionView 21 Color Display $2199
Radius PressView™ 21 SR Color Display $3075
Radius VideoVision PCI ..... call
Radius VideoVision NuBus .... ~~$2299~~

Radius PrecisionView 17

radius

$235

Hewlett-Packard DeskWriter 600

$2995

Umax PowerLook II Scanner

The PowerLook II features 36-bit color data capture for over 68.7 billion colors and 4096 shades of gray. With its 3.2+ dynamic range, it captures greater detail in shadows and highlights. It features 600 x 1200 dpi hardware resolution and a maximum resolution of 9600 dpi.

UMAX
The Magic of Color™

$689

Kodak Digital Science DC40 Digital Camera

The Kodak Digital Science DC40 camera is an automatic, digital snapshot camera that's ideal for business users and desktop publishers.

$1199

MicroNet

MicroNet Master CD Plus 2X CD-Recorder

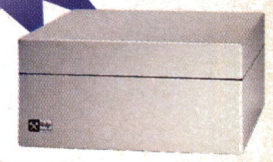
The Master CD Plus can master a complete 650 MB disc in less than 38 minutes and also be used as a dual-speed CD-ROM Drive.

$275

Visioneer PaperPort VX

$1399

FWB Hammer CD-R 2X Recorder



$2899

FWB incorporated

FWB 4GB SledgeHammer PCI Disk Array

FWB's SledgeHammer Disk Arrays deliver everything you need in a high capacity RAID system with uncompromising performance, security and flexibility.

Modems

SupraExpress 288 Modem	$165
SupraFAXModem™ 288 Modem	$215
Global Village TelePort Platinum™ Modem	$199
Global Village PowerPort Mercury™ For PowerBook 500 Series/Duo.	$329
Global Village PowerPort Platinum For PowerBook 5300 Series.	$325

Monitors

NEC MultiSync® XV14/XV15+™	$335 / $469
NEC MultiSync XV17+™	$819
NEC MultiSync XE21/XP21™	$1799 / $2199
Sony CPD-15sfII 15" Trinitron	$509
Sony CPD-17sfII 17" Trinitron	$889
Portrait Display Labs Pivot 1700™	$965

Storage

Iomega Zip Drive	$199
Iomega Jaz Drive	$599
MicroNet 4X Multimedia Advantage Kit	$399
NEC 4Xc 7 Disc Changer	$349
Pinnacle Micro Recordable CD-ROM Drive	$1239
1GB Quantum External Drive	$359
SyQuest EZ135 Removable Drive	$225

Software

Adobe Illustrator™	$369
Adobe Photoshop™ 3.0.1	$559
Apple Internet Connection Kit	$45
Connectix RAM Doubler	$53
ClarisWorks™ 4.0	$65*
Claris Emailer	$59
CD Adventure Pack	$35
Deneba Canvas 3.5	$255
Guinness Encyclopedia	$29
Myst	$47
Macromedia FreeHand 5.5	$379
Microsoft Office 4.2.1	$449
Marathon II	$45
Mac Shareware CD	$19
Fractal Design Painter™ 4.0	$339

Scanners

Agfa StudioScan II Scanner	$935
Agfa Arcus II Color Scanner	$1925
UMAX Vista S-8 Pro Scanner	$779
UMAX Vista S-12 Pro Scanner	$869
Hewlett-Packard 4c Scanner	$929

Printers

Hewlett-Packard DeskWriter 660C Printer	$399
Hewlett-Packard LaserJet 5MP Printer	$1039
Hewlett-Packard DeskJet 1600CM Printer	$1969
Epson Stylus Color Pro Printer	$589
Epson Stylus Color Pro XL Printer	$1789

Graphics Boards

Radius Thunder™ 30/1152	$759
Radius Thunder 30/1600	$1149
Radius ThunderColor™ 30/1152	$1499
Radius ThunderColor 30/1600	$1899
IMS Twin Turbo PCI 128M	$569
Number Nine Imagine 128 PCI 4MB	$849

* Must be purchased with Mac CPU, while supplies last.

- Corporate POs Accepted
- Leasing Available

1030 Wirt Rd.,#400 • Houston, TX 77055

Call Today For Our Free Catalog!

1-800-289-7939

Outside Continental U.S.: Call 713-957-1999 or FAX: 713-956-5741

SYEX EXPRESS

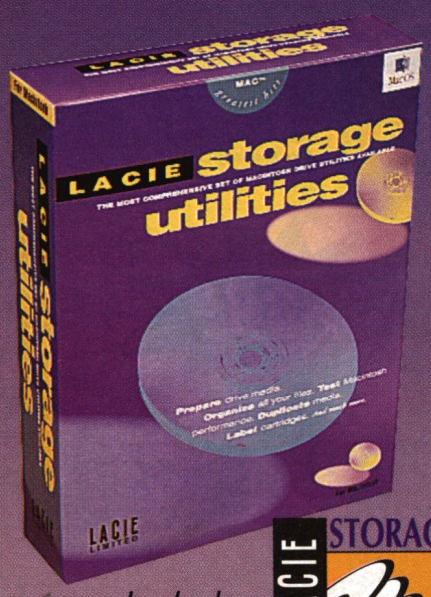
VISA MasterCard DISCOVER

Visit our World Wide Web Site
http://www.syex.com
or
Simply mail us at info@syex.com

Prices & product availability subject to change without notice • We are not responsible for typographical errors • RMA number is required for any product returned • Returns subject to a restocking fee • All trademarks or registered trademarks are property of their respective owners • Syex Express does not guarantee product compatibility • Sorry, no CODs

LACIE LIMITED

offers a world of storage solutions



LACIE STORAGE UTILITIES

Includes acclaimed Silverlining disk management software plus four other vital performance enhancements!

1995 MAC HOME JOURNAL READERS' CHOICE

MAC HOME JOURNAL

Industrial Design Excellence Award SILVER 1994

I.D. Magazine 40TH ANNUAL DESIGN REVIEW WINNER 1994

MACUSER EDITORS' CHOICE AWARD 1995 FINALIST

MACWORLD MW EDITORS' CHOICE

TSUNAMI HARD DRIVES

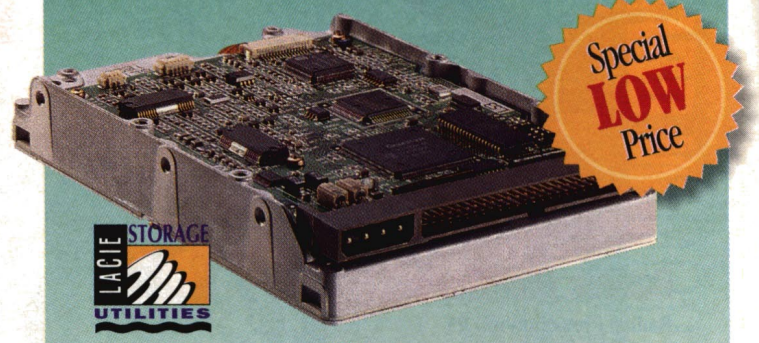
ALL-TIME Favorite!

- Complete with switchable active termination, cables and La Cie Storage Utilties.
- High-speed drive and disk-controller technology.
- Up to 4.3GB capacity in a 6.5"x8.5"x2.2" compact case.

$319 Tsunami 1080 MB

850MB Quantum Trailblazer	5400 rpm	3 yr. warr.	$269
1080MB Quantum Fireball	5400 rpm	3 yr. warr.	$319
1280MB Quantum Fireball	5400 rpm	3 yr. warr.	$369
2160MB Ultrastar ES IBM	5400 rpm	3 yr. warr.	$669
2210MB Quantum Capella	5400 rpm	5 yr. warr.	$679
4.3GB Quantum Atlas	7200 rpm	5 yr. warr.	$1199

INTERNAL HARD DRIVES



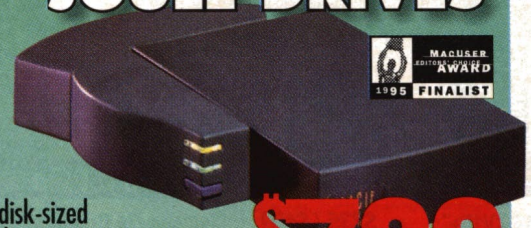
Special LOW Price

- High-performance drive and controller technology.
- Built-in SCSI interface.

$599 IBM 2 GB

3.5" Hard Drives			Brackets available for $10 with internal hard drive purchase.
850MB Quantum Trailblazer	5400 rpm	3 yr. warr.	$199
1080MB Quantum Fireball	5400 rpm	3 yr. warr.	$249
1280MB Quantum Fireball	5400 rpm	3 yr. warr.	$309
2160MB Ultrastar ES IBM	5400 rpm	3 yr. warr.	$599
2210MB Quantum Capella	5400 rpm	5 yr. warr.	$619
4.3GB Quantum Atlas	7200 rpm	5 yr. warr.	$1149

PORTABLE JOULE DRIVES



- Share hard disk-sized files with diskette convenience.
- Docking provides new security and backup solutions.

$799 Joule 2 GB

3.5" Hard Drives		
850MB Quantum Trailblazer	3 year warranty	$329
1080MB Quantum Fireball	3 year warranty	$369
2210MB Quantum Capella	5 year warranty	$799

Joule Bases – Supports Stacks Up To 6 Drives High		
850MB Quantum Hard Drive	3 year warranty	$389
1080MB Quantum Hard Drive	3 year warranty	$429
230MB Optical	1 year warranty	$529
270MB SyQuest	1 year warranty	NEW! $479

Joule RAID Quantum drives bundled with Trillium Research Software configurable to levels 0, 1, 4 & 5.		RAID Drives only	RAID with SCSI CARD
4.2GB	3 year warranty	$1999	$2299
8.4GB	3 year warranty	$3499	$3799
16.8GB	3 year warranty	$6999	$7299
25.8GB	3 year warranty	$9999	$10299

APPLE® EXTERNAL HARD DRIVES

The only hard drive backed with Apple engineering. For a local reseller or catalog resource call 1-800-999-0499

1995 MAC HOME JOURNAL READERS' CHOICE

Sold exclusively by these and other fine Authorized Apple Resellers:

COMPUSA

COMPUTER City

MacConnection

Creative Computers MacMall YOUR MAC HOMEBOUND!

The Mac Zone

MacWAREHOUSE

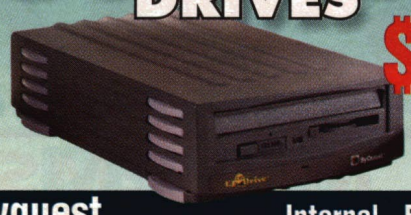
MICRO CENTER

LACIE LIMITED

Mon.– Fri. 5AM-7PM & Sat. 8AM-NOON PST
International 503-520-9000
Fax 503-520-9100 (24 hrs.)
http://www.lacie.com/~lacie

* La Cie Storage Utilities FREE with the purchase of a La Cie Drive. Call for details, conditions, limited money back guarantee, and free offers. Prices do not include shipping and only apply to products shipped within the continental United States. Add sales tax where applicable. Tsunami, Joule, Joule Portable, La Cie Term, Silverlining, La Cie and the La Cie logo are trademarks of La Cie, Ltd. Apple, the Apple logo, and Macintosh are registered trademarks of Apple Computer, Inc. registered in the United States and other countries used under license therefrom. All other trademarks are the property of their respective companies. All prices, specifications, terms, warranties, descriptions, products and services herein are subject to change without notice or without recourse. © Copyright 1996 La Cie, Ltd. All rights reserved.

SYQUEST DRIVES



$229 EZ135

Syquest		Internal	External	Cartridge
EZ135MB	Includes FREE cartridge 2 year warranty		$229	$19.95
200MB	1 year warranty	$319	$369	$79
270MB	1 year warranty	$329	$399	$59

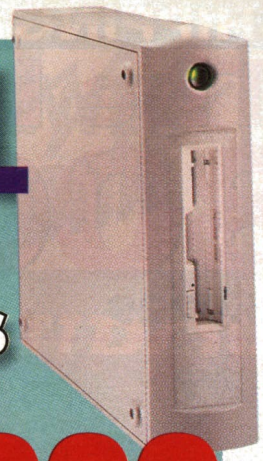
CD-R DRIVES

- CD-Rs ship with Gear Multimedia software.
- Low cost media for backup.

$1099 2X Read/Write

2X Read / 2X Write		$1099
4X Read / 2X Write Yamaha	NEW!	$1199
4X Read / 4X Write Yamaha	NEW!	$2399
600MB CD-R Disk 74 Minutes	10 Disk Pack	$79

OPTICAL AND DAT DRIVES



LaCie Storage Utilities

- Optical is the new standard in removable reliability.
- DAT – The ideal medium for data backup.

$1999 2.6GB Optical

Other Optical		
230MB PowerBook Internal	1 year warranty	$399
230MB Internal	1 year warranty	$399
230MB External	1 year warranty	$469
230MB Optical Cartridge		$19.95
2.6GB External	1 year warranty	$1999
2.6GB Optical Cartridge		CALL

DAT Drives Includes Retrospect	Internal	External
8.0GB Internal DAT DDS-2	$799	$899
8.0GB Turbo DAT DDS-2	$1099	$1149

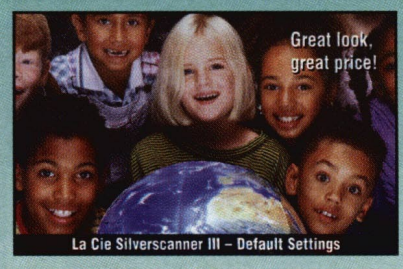
SILVERSCANNER DESKTOP SCANNERS

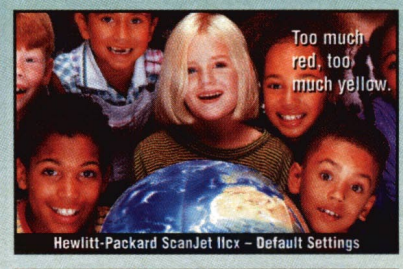
Silverscanner III

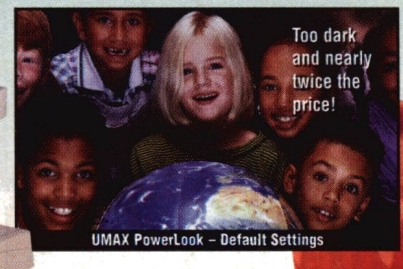
Silverscanner DTP

MacUser BEST BUY

1 Year Scanner Warranty







Silverscanner DTP Complete
Desktop color, 400x800dpi interpolated to 3200 dpi.
- Photoshop LE
- Read-It Pro OCR
- Silverscan

$899

Silverscanner III Package 1
Pro color, 600x1200dpi interpolated up to 4800 dpi.
- Color It!
- Read-It Pro OCR
- Silverscan

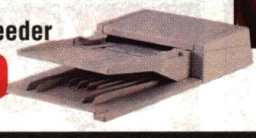
$1499

Silverscanner III Package 2
Pro color, 600x1200dpi interpolated up to 4800 dpi.
- Photoshop (full)
- Read-It Pro OCR
- Silverscan

$1799

No matter which software bundle you choose, you'll also receive Silverscans' award-winning scanning software giving you professional scans.

Transparency Adapter **$799**



Sheet Feeder **$499**

LACIE LIMITED offers award-winning customer support

30 Day Money Back Guarantee

Toll Free Technical Support

Factory Direct Quality & Value

Ready to Plug And Play

Toll-free tech line: 1-800-288-9919

Call 1-800-999-1386

AMERICAN EXPRESS VISA MasterCard

FREE→ SHIPPING FOR YOUR FIRST WEB SITE ORDER! (UP TO 10 lbs)

The LLB Company, Inc.

1-800-848-8967

International: 206.746.0229 WEB SITE: HTTP://llb.com Fax: 206.746.5168

MEMORY

Standard 30-pin SIMMs

1MB 100/80/70NS	$31/32/35
2MB 80/70NS	58/74
4MB 80/70NS	102/105
8MB 70NS	270
16MB 70NS	455

30-pin, 36 bit PC SIMMS

1MB 70NS	$45
4MB 70NS	149

8MB 72PIN $178

72-pin SIMMs

4MB 70/60NS	$88/94
8MB 70/60NS	178/199
16MB 70/60NS	365/367
32MB 60NS	771

72-pin, 36 bit PC SIMMS

4MB 70NS	$147
8MB 70NS	339
16MB 70NS	475
32MB 70NS	979

PB 5300 Series

8MB/12MB RAM	$284/469
16MB/32MB RAM	538/1035

PB 190 Series

4MB/8MB 70NS	$203/334
12MB/16MB 70NS	512/599
32MB70NS	1219

PB500 Series

4MB/8MB RAM	$148/268
16MB/32MB RAM	545/1089

4MB PAL SIMMs for II,IIx

4MB 80/70NS	$129/129

64-pin SIMMs for IIfx

1MB 80/70NS	$43/43
4MB 80/70NS	155/155
8MB 70NS	349
16MB 70NS	515

168-pin DIMMs

4MB 60NS	$125
8MB 60NS	199
16MB 60NS	362
32MB 60NS	762
64MB 60NS	1560

PBDUO 210/230 Series

PB DUO-4MB	$169
PB DUO-8MB	299
PB DUO-12MB	479
PB DUO-14MB	549
PB DUO-20MB	698
PB DUO-28MB	1172

What type of Memory do I need?

Standard 30-Pin Simms:
Plus, SE, SE 30, Classic, Classic II, Color Classic, LC, LCII, Performa 200, Performa 400-430, Performa 600, Quadra 900/950, Mac II, IIx, IIcx, IIsi, IIci, IIfx, IIvx, IIvi.

Standard 72-Pin Simms:
Quadra 605/630, 610, 650, 700, 800/840AV, LCIII, LC475, LC630, Performa 450-560, 575 and 6115CD, PowerMac 6100, 7100, 8100, WS 80, WS60, WS 95, WS 6150 and WS 8150, 9150.

168 Pin Dimms:
PowerMac 9500, 8500, 7500, 7200

PowerMac Memory Selection Guide

PowerMac 6100

(8MB) Standard 72-pin SIMMS

To upgrade your RAM to:	You need to order:
16MB	(2) 4MB 70/60NS
24MB	(2) 8MB 70/60NS
40MB	(2) 16MB 70/60NS
72MB	(2) 32MB 60NS

PowerMac 7100, 8100

(8MB) Standard 72-pin SIMMS

To upgrade your RAM to:	You need to order:
16MB	(2) 4MB 70/60NS
24MB	(2) 8MB 70/60NS
40MB	(2) 16MB 70/60NS
72MB	(2) 32MB 60NS
136MB	(4) 32MB 60NS
264MB *(7100 only)*	(8) 32MB 60NS

PowerMac 9500, 8500, 7500

(16MB) Standard 168-pin DIMMS

To upgrade your RAM to:	You need to order:
32MB	(2) 8MB 70NS DIMMS
48MB	(2) 16MB 70NS DIMMS
80MB	(2) 32MB 70NS DIMMS
144MB	(2) 64MB 70NS DIMMS

PowerMac 7200

(8MB) Standard 168-pin DIMMS

To upgrade your RAM to:	You need to order:
24MB	(2) 8MB 70NS DIMMS
64MB	(2) 16MB 70NS DIMMS
128MB	(4) 32MB 70NS DIMMS
256MB	(4) 64MB 70NS DIMMS

FPUs/CoProcessors Video RAM

FPU's/Math CoProcessors

Centris FPU 25MHz	$189
FPU 33MHZ DUO/P600	52
FPU Color Classic 16MHZ	44
FPU LCIII 25 MHZ	49
FPU LC/LCII 16 MHZ	49
LC575 33MHZ Math CoProc.	285

VRAM/CACHE

256K 80NS Video RAM	$17
512K Video RAM	22
1MB Video RAM PM72/75/8500	55
2MB Video RAM PM 9500	229
256K/512K Cache Card	72/411
1MB Cache Card	792
256K Cache Dimm PMPCI256	109
512K Cache Dimm PMPCI512	185

MODEMS

GLOBAL VILLAGE

Teleport Platinum 28.8 V.34	$205
PowerPort 1XX Platinum 28.8 V.34	339
PowerPort Gold PC Card 14.4	180
PowerPort Platinum PC Card 28.8	349
PowerPort Platinum PRO PC Card	519

SUPRA

SUPRA Simple Internet 28.8 Ext.	$189
SUPRA 28.8 V.34	229
SUPRA 28.8 PB FAX Modem	189
SUPRA EXPRESS 144 PLUS	99
SUPRA EXPRESS 288 External V.34	159

US ROBOTICS

28.8 Sportster V.34 Internet Bundle	$212
Sportster14,400 Mac & Fax	119
28.8 V.34 PCMCIA Sportster	291

TDK

28.8 V.34 PCMCIA PB190/5300	$259
Global Class 288 V.34 PCMCIA	355

Motorola

Lifestyle 28.8 V.34	$212
Power 28.8 V.34	270
ISDN Bitsurfer	279

MEGAHERTZ

Cruise Card 14.4 PCI	$135
Cruise Card 28.8	295
Cruise Card 14.4	159

ACCELERATORS

DAYSTAR DIGITAL

PowerPro 601 100MHZ $1240

Turbo 040 40MHZ w/cache	$679
Turbo 040i 33MHZ w/cache no FPU	609
PowerPro 601 100MHZ w/cache	1240
Turbo 601 100 MHZ w/adapter	1175
PowerCard 601 100MHZ	959

SONNET

Quad Doubler 40MHZ Centris610	235
Quad Doubler 40MHZ w/FPU Centris 610	345
Quad Doubler 50MHZ w/FPU Quadra 610	390
Quad Doubler 50MHZ w/FPU Centris 650	390
Quad Doubler 50 MHZ Centris 660AV/7/900	390

CD-ROM

Accessories

Mark I Flight Cont.Sys	95
Mark I Weapons Cont.Sys	69
Rudder Cont. Sys.	105

Entertainment

Battle Beast	29
Dark Forces	49
Descent	50
Dust	39
F/A-18 Hornet 2.0	49
Full Throttle	49
Havoc	39
Marathon II	45
Monopoly/Virgin	42
Myst	49
Power Pete	27
Phantasmagoria	59
Rebel Assault II	50
Triple A Pak	40
Warcraft 1.0	48

Miscellaneous

Soft Windows 2.0	299
Quicken 6.0 Deluxe	65

COREL PHOTO CD'S BUY 4 - GET 1 FREE!

UMAX®
Powerlook II
(includes Transparency Adapter)
$2829

GLOBAL VILLAGE
PowerPort Platinum PC Card
$349

SyQuest®
EZ135 Drive
$224
Single Cart. $19.50
Five-Pack $96.25
Ten-Pack $190.00

SONY®
CD-R and Opticals
Buy 5, get 1 free!
Includes 3.5" and 5.25" Opticals and Recordable Cd's

FREE CATALOG! 1.800.848.8967

Electronic orders: Compuserve @ 73423.1272 @Compuserve.com

- P.O.'s accepted upon approval
- All major credit cards accepted - No surcharge - when shipped
- Prices subject to change, not responsible for errors
- We export to most countries in the world
- Orders received before 8:00 pm EST weekdays shipped same day
- Open 6am to 7pm M-F. 9am to 4pm Saturdays
- Returns subject to a 15% restocking fee

E-Mail us!

The LLB Company, Inc. 13228 NE 20th St., Suite B, Bellevue, WA 98005

WK022696

AIRBORNE EXPRESS OVERNIGHT $7.00 up to 10lbs

DRIVES

APPLE
1080MB 409
850MB 339
2GIG 925

QUANTUM (EXTERNAL)
1080 Ext. Fireball $345
850MB Ext. Trailblazer .. 279
Capella 2.2 GB 759
GrandPrix 4.2 GB 8.6 MS .1049

Rumi
200MB SyQuest w/Cart $479
270MB SyQuest w/Cart 479

NEC
6XE Multi-Spin CD-ROM Drive $519
4XC 7CD Changer 369

2X CD Recorder/Writer $1485
4X CD Recorder/Writer 3035
FWB incorporated

SyQuest EZ135 W/Cartridge $224

Iomega
Iomega Zip Drive $199
Jaz 1.0GB Drive 605

PINNACLE MICRO
THE OPTICAL STORAGE COMPANY
RCD1000 w/10 Recordable CD's $1295
RCD5020 Ext. CD Recorder 1265
APEX 4.6GB Optical Drive 1589

MONITORS

APPLE
AV1710 .. APPLE VISION 17" $959
AV1710AV APPLE VISION 1710 AV 26MM . 1,069
MS1705 .. MULTISCAN 17" 28MM 759
MS20 .... MULTISCAN 20" 1,989

SONY
15SF ..... SONY 15" SFZ MULTISCAN 539
17SE1 .... SONY 17" 17SE1 1,150
17SF ..... SONY 17" MULTISCAN 939

NEC
XE15 ..... MULTISYNC XE15 15" $620
XE17 ..... MULTISYNC XE17 17" 1,099
XE21 ..... MULTISYNC XE21 21" 1,845
XP17 ..... MULTISYNC XPI7 17" 1,135
XP21 ..... MULTISYNC XP21 21" 2,140
XV15 ..... MULTISYNC XV15 15" 499
XV17 ..... MULTISYNC XV17 17" 829

radius
PressView 21SR $3,469
PressView 17SR 2,122
PrecisionView 21 2,415
PrecisionView 17 1,043

PRINTERS

APPLE
Color Laserwriter 12/600 ..... $6465
Laserwriter 4/600 895
Personal Laserwriter 320 809

HEWLETT PACKARD
HEWLETT PACKARD
HP LaserJet 5L $515
HP LaserJet 5P Plus 888
HP LaserJet 5si 2860
HP DeskWriter 660C 399
We also carry HP and Apple Printer supplies

EPSON
STYLUS COLOR II PRINTER $409
STYLUS COLOR PRO XL PRINTER 1795

MEDIA

SONY

CDR 10 PK $73

Magneto Optical Disks
5.25" MO 1.3GB 1024k b/s / 1.2GB 512k b/s $60
5.25" MO 650MB 1024k b/s / 594MB 512k b/s 55
3.5" MO 230MB/Mac Formatted 28/30
3.5" MO 128MB/Mac Formatted 24/26

SONY CD-Recordable
74 Min 4x 650MB-10 Pack $73
74 Min 4x 650MB 8

Verbatim - *Call for the full line of Verbatim products*
DataLife 4mm/8mm Data Cartridges
8mm, DL 112 Meters 2.5/5.0GB $7
4mm, DL 60 Meters DDS-MRS 1.3GB 7.50
4mm, DL 90 Meters DDS-MRS 2.0GB 9.50

Iomega
Iomega ZIP Cartridge 100MB $19
- 3pack/10 Pack 49.50/139
Iomega Jaz 1GB Cartridge/5 Pack 123/490
Iomega Jaz 540MB Cartridge/5 Pack ... 69/294

SyQuest EZ135 ..... $19.50
- 5 Pack 96.25
- 10 Pack 190.00

The Original SyQuest Cartridge

	1-4	5-9	10+
44MB 5.25"	$42	$41	$40
88MB 5.25"	$48	$47	$46
200MB 5.25"	$76		$74.75
270MB 3.5"	$59	$58	$57
105MB 3.5"	$55		$54

media HABITAT

ACCESSORIES

ADESSO
KEYBOARD W/TRACKBALL $89
PRO POINT EXT KEYBOARD 89
SOFT TOUCH+ EXT. KEYBOARD 49
TRU-FORM EXT. KEYBOARD 89
TRUFORM EXT. KEYBOARD W/PNTR 100
POWERMOUSE 35
POWERMOUSE DELUXE PREMIUM PK 45

WACOM
4X5 ARTPAD II ADB W/ERASER 139
ARTZ II 6X8 GRAPHICS TABLET 315
ARTZ II 12X12 GRAPHICS TABLET 439
ARTZ II 12X18 GRAPHICS TABLET 705
ARTZ II 12X18 ELECST. TABLET 885
ARTZ II 18X25 GRAPHICS TABLET 1985

SCANNERS

EPSON 1200C PRO $1202
VISIONEER PaperPortVX for Mac 365
Nikon ELECTRONIC IMAGING CoolScan External 1379
Super CoolScan 1999
AGFA StudioScan IISI 865
ARCUS II 1941
POLAROID SPRINTSCAN 1555

UMAX
POWERLOOK I I (includes Transparency Adapter) $2829
VISTA S-12 PRO+ 908
VISTA S-12 LE+ 808
VISTA S-6 PRO+/ LE+ 698

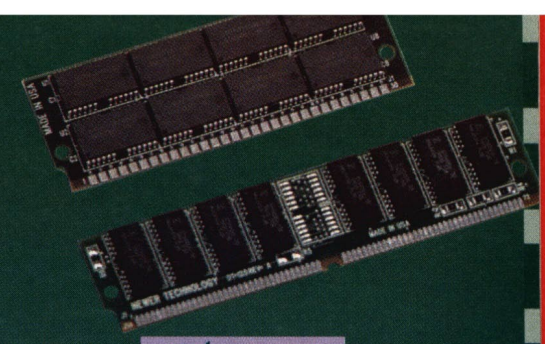
QUANTUM
Internal Drives

850MB INT. TRAILBLAZER . 219
1080 INT. FIREBALL $289
2.1GB INT. DRIVE 789
4.3GB ATLAS - INT. 1,215

POWERBOOK ACCESSORIES

VST PB190/5300 BTRY NIMH 169
VST PB190/5300 BTRY/CHRGER 5000 .. 309
VST PB5300 POWER ADAPTER AC/DC 229
SUPERCHARGER PB5300 95
MINI AC ADAPTER PB5300 69
APPLE AC ADAPTER PB 5300 59

NEWER HABITAT



NUPOWR

Newer TECHNOLOGY

POWER PC UPGRADE FOR PB500!

PB 500 117MHZ 0MB $615
PB 500 117MHZ 4MB 799
PB 500 117MHZ 8MB 989

PC CARD

PC CARD DRIVE $322
PC CARD DRIVE/MICRODOCK BUNDLE .. 524
PC CARD 10MB FLASH MEMORY 392
PC CARD 20 MB FLASH MEMORY 827
PC CARD 2MB FLASH MEMORY 130
PC CARD 28.8 FAX MODEM 340

MEMORY

8MB 72PIN 70NS SIMM $275

4MB 64 BIT 70NS DIMM . . . $187
8MB 64BIT 70NS DIMM. . . . 259
16MB 64 BIT 70NS DIMM . . 489
32MB 64BIT 70NS SIMM 1,025
64MB 64BIT 70NS DIMM 2,069

MICRODOCK

NEWER 16SC ULTRADOCK $422
NEWER 16SCE ULTRADOCK W/ENET 499
COLOR MICRODOCK 242
ETHERNET MICRODOCK 173
FLOPPY MICRODOCK 92
PC CARD MICRODOCK 224
SCSI MICRODOCK 138
FLOPPY DRIVE 119
FLOPPY DRIVE/MICRODOCK BUNDLE ... 199

VRAM/CACHE

POWERCLIP/256K CACHE BUNDLE $208

POWERMAC 1MB CACHE .. $785
POWERMAC 512K CACHE ... 340
POWERMAC CACHE 141
CACHE 256K DIMM 176
1MB VRAM 7200/7500/8500 92
2MB VRAM 9500 229

For all your quality Newer Technology products, call Newer Habitat

1.800.840.2212

FAX: 206.746.5168

WK022696

800-572-4305

Web Watch
www.directdc.com

We are the High-end storage configuration Experts. Call us for your solutions on RAID Sytems, Video, Networks, and Jukebox applications. All Platforms.

"Direct Connections provided excellent technical support." **MacWorld July'95**
"Direct Connections' array offered the best performance per dollar of the drives tested." **Digital Video Oct. '94**
"Your next option is to locate...highly visible digital video suppliers like Direct Connections." **NEWMEDIA June '95**
"This array is the one to beat." **Ken Grey** Writer for WIRED, Computer User, MovieMaker, Computer Video, and Digital Video Magazine.
"Stick with a vendor such as Direct Connections that understands how to prepare a RAID for desktop video." **MacWorld April '95**

HOURS: M-F 8:00-8PM SAT 10-2 CST Int'L: 612-937-9771 FAX: 612-937-6285

HARD DRIVES

Differentials available

Only from DC

- 30day money back
- Toll free tech support
- In-house engineers
- Factory direct products
- Award winning service
- $5 million in inventory
- 9 Years in business

Ask us about MR (magneto-resistive) Head Technology

5 YEAR WARRANTY

BRAND/MODEL	CAPACITY		ACCESS	RPM	INTERNAL	EXTERNAL
Quantum 2.5" IDE	540MB		14MS	5400	$ 245	
Quantum 2.5" IDE	810MB		14MS	5400	$ 339	
Quantum 2.5" IDE	1.0GIG		14MS	5400	$ 425	
Conner CFP1080s	1.2GIG	LP	11MS	5400	$ 295	$ 365
Seagate ST51080N ***	1.2GIG	LP	12.5MS	5400	$ 290	$ 360
Seagate ST31231N***	1.2GIG	LP	9MS	5400	$ 395	$ 465
Seagate Hawk	2.4GIG	LP	9MS	5400	$ 655	$ 725
Conner CFP2105S	2.1GIG	LP	9MS	5400	$ 585	$ 655
Conner CFP2107S	2.1GIG	LP	8MS	7200	$ 759	$ 829
Quantum Capella	2.2GIG	LP	8.6MS	5400	$ 699	$ 799
Quantum Atlas	2.1GIG	LP	8MS	7200	$ 795	$ 865
Seagate Barracuda 2	2.5GIG	LP	8MS	7200	$ 815	$ 885
Seagate Barracuda 2W	2.5GIG	LP	8MS	7200	$ 939	$ 999
Conner CFP2107W	2.5GIG	LP	8MS	7200	$ 795	$ 895
Fujitsu m2934s	4.2GIG	MR	8MS	7200	$ 1125	$ 1195
Fujitsu m2934W	4.2GIG	MR	8MS	7200	$ 1175	$ 1275
Seagate Barracuda 4	4.1GIG		8MS	7200	$ 1295	$ 1365
Seagate Barracuda 4W	4.1GIG		8MS	7200	$ 1365	$ 1435
Seagate ST15230N	4.3GIG		9MS	5400	$ 999	$ 1099
Conner CFP4207S	4.2GIG		9MS	7200	$ 1045	$ 1115
Conner CFP4207wide	4.2GIG		9MS	7200	$ 1099	$ 1199
Atlas XP34300s	4.3GIG		8.6MS	7200	$ 1099	$ 1169
Seagate Elite 9	9.0GIG		11MS	5400	$ 2095	$ 2195
Seagate Elite 9W	9.0GIG		11MS	5400	$ 2295	$ 2395

CD RECORDERS/PLAYERS

Yamaha 4 speed recorder/ 4 speed player

$1749

4x Recorder
4x Player
4 GIG Hard drive
10 Blank CD's
1 Toast Software
$2995

Includes Free software and 10 CD's

Ricoh 2 speed Recorder/ 2 Player	External	$ 949
Yamaha 2 speed Recorder/ 4 speed Player	External	$ 1145
Yamaha 2x4 Recorder with built in hard drive	External	$ 1529
Pioneer 4 speed 6-Disc CD-ROM Changer	External	$ 325
Toshiba 3701 6 speed CD Player	External	$ 445
Pioneer 4 speed CD Player	External	$ 265
Panasonic PD 4 speed/650mb Optical	External	$ 535

Many CD Tower Configurations available. Upto 500 Disks!

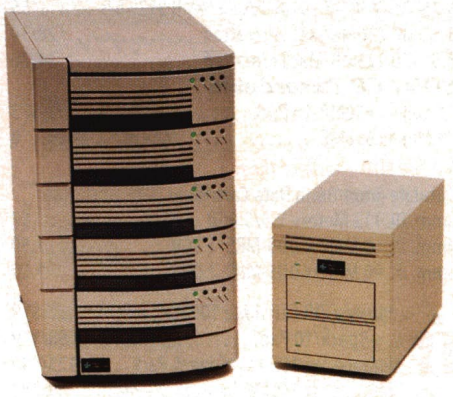
MEDIA

128MB	Optical	$ 15	10 Blank CD's	$ 69
230MB	Optical	$ 25	90M 4MM Tape	$ 8
1.3GIG	Optical	$ 69	160M 8MM Tape	$ 18

"Stick with a vendor such as Direct Connections that understands how to prepare a RAID for desktop video." MacWorld April '95

RAID SYSTEMS

FAST DESKTOP OR SERVER



- **28mb/sec sustained sequential Writes.**
  Tested with MacBench on PowerMac 9500.
  12GIG with 2 PCI accelerator cards **$ 7799**

From Hardware RAIDS to Software RAIDS, we'll show you how to configure the best system to meet your needs.

External, Remus software, and cabling

- 4 GIG Fast and Wide Raid $ 2199
- 8 GIG Fast and Wide Raid $ 2799
- 16 GIG Fast and Wide RAID $ 6130
- 28 GIG Fast and Wide RAID $ 9499
- 40 GIG Fast and Wide RAID $ 15599

Atto Silicon Express IV	$ 835
Atto Express PCI MC	$ 765
Atto Express PCI SC	$ 345
Adaptec AHA-2940W	$ 245
SCSI Expander	$1345

MEDIA 100 TARGA 2000 radius

OPTICAL DRIVES

$1959

2.6GIG Sony Optical for $1959 external including all cabling, and software!!

1 YEAR WARRANTY

CAPACITY	MODEL	EXTERNAL
230MB	Fujitsu	$ 499
1.3GB	NEC	$ 1295
1.3GB	Sony 4MB cache	$ 1695
2.6GB	Sony	$ 1959
26GB	Sony Jukebox	$ 4695

TAPE BACK-UP

We are the tape-backup Experts

2 YEAR WARRANTY

$3599

With 2.5MB/sec sustained transfer, the DLT2000XT is perfect for digital video or pre-press with large data files.

30GIG

All systems include one tape cartridge, cabling, and Retrospect software.

CAPACITY	MODEL	MEDIA	INTERNAL	EXTERNAL
-4GIG	Tandberg Panther	1/4"	$ 479	$ 549
*-8GIG	Sony 5000 DDS-2	4MM	$ 939	$ 999
-14GIG	Exabyte 8505XL	8MM	$ 2065	$ 2125
-10GIG	Exabyte 8505S	8MM	$ 1475	$ 1575
-30GIG	DLT2000XT	1/2"		$ 3599
-40GIG	DLT4000	1/2"		$ 5499
-140GIG	Exabyte-10h Library	8MM		$ 4999
-200GIG	Spectra Logic 4000	4MM		$ 8599
-280GIG	Breece Hill Library	1/2"		$ 27999

DIRECT CONNECTIONS 7668 Executive Drive Eden Prairie, MN 55344 Gov't, Corp, and Univ. P.O's accepted. *1YR Warranty 30 day money back does not apply towards media.

Mac Xtra Discounts

CALL FOR OUR FREE CATALOG!

1-800-553-4230

MAC Xtra DISCOUNTS

FAX your order!
206-746-5324

International:
206-746-3803

MEDIA

SYQUEST	
EZ135MB SYQUEST CARTRIDGE	$19
EZ135MB SYQUEST CART. -10 PK.	$180
44MB SYQUEST CARTRIDGE	40
88MB SYQUEST CARTRIDGE	45
105MB SYQUEST CARTRIDGE	52
200MB SYQUEST CARTRIDGE	73
270MB SYQUEST CARTRIDGE	56
VERBATIM	
3.5" 128MB OPTICAL	21
3.5" 230 MB OPTICAL	28
RECORDABLE CDROM 74MIN/640MB	8
RECORDABLE CDROM 74MIN/640MB-10 PK.	73
VERBATIM 2SDD 3 1/2 10PK DISK	7.50
VERBATIM 4MM/60M DATA CART	7
VERBATIM DATA 4MM DC 295 FT	9
VERBATIM DATA 8MM DC 367 FT	7
VERBATIM DC 2120 120MB QIC80	12.50
VERBATIM EP-S HIGH YIELD TONER	60
VERBATIM EP-N TONER CART	89
VERBATIM EP-L TONER CART	59
VERBATIM ANTI-GLARE FILTER 14/15"	33
IOMEGA ZIP	
ZIP 100 MB CARTRIDGE	19.50
ZIP 100 MB CARTRIDGE - 10- PACK	139
ZIP 100 MB CARTRIDGE - 3- PACK	45
IOMEGA JAZ	
JAZ 1GB CARTRIDGE	123
JAZ 1GB CARTRIDGE - 5 PACK	490
JAZ 540MB CARTRIDGE	69
JAZ 540MB CARTRIDGE - 5 PACK	294
TDK AUDIO PRODUCTS	
120 MIN. HIGH STANDARD	2.50
120 MIN. EXTRA HIGH	3.25
120 MIN. HI-FI GRADE	3.50
120 MIN. SUPER-VHS	6.90
30 MIN. EXTRA HIGH VHS-C	3.99
120 MIN. 8 MM HIGH STANDARD	4.25
120 MIN. 8 MM EXTRA HIGH	4.75
120 MIN. HI-8 METAL EVAPORATE	13.99
SONY BATTERIES	
D2 PACK	2.99
C2 PACK	2.99
AA 2 PACK	2.49
120 MIN HIGH GRADE / 4 PK	5.90/20
120 MIN HI-8 METAL PART/4 PK.	8.99/34
SONY VHS TAPES	
120 MINUTE	$3.00
120 MINUTE 4 PACK	$11
160 MINUTE	$3.50
120 MINUTE SUPER	8.50
160 MINUTE SUPER	10
SONY CD-RECORDABLE	
RECORDABLE CDROM 74MIN/640MB	8
RECORDABLE CDROM 74MIN/640MB-10 PK.	73
SONY BETA TAPES (LIMITED AVAILABILITY!)	
500 / 750 METER LGTH	3.50 / 3.50
750 METER LGTH HIGH GRADE	4.00
500 METER LGTH METAL	15.99
CABLES	
POWERBOOK TO HARD DRIVE CABLE	37
MODEM CABLE 6'PLUS/SE/II	7
SCSI CABLE M50-50 6' CABLE	19
SCSI M50-M50 18 CABLE	9
SCSI TERMINATOR	15

MODEMS

GLOBAL VILLAGE	
TELEPORT PLATINUM 28.8 V.34	$203
POWERPORT 1XX PLATINUM 28.8 V.34	337
POWERPORT PLATINUM PC CARD 28.8	349
POWERPORT PLATINUM PC CARD PRO	519
US ROBOTICS	
US ROBOTICS 28.8 V.34 INTERNET BUNDLE	209
US ROBOTICS 14.4 EXT	117
ZOOM	
ZOOM 2400 BPS MODEM	65
ZOOM V.FAST 28.8	189
ZOOM VFX 14.4 V.32BIS S/R FAX	169
ZOOM VFXV 14.4 V.32BIS W/VOICE	148
ZOOM 14.4 EXTERNAL S/R V.42	79
SUPRA	
SUPRAEXPRESS 28.8 EXT V.34	159
SUPRA 14.4 EXPRESS	98
SUPRA 28.8 PB FAX/MODEM	187
SUPRA 28.8 V.34 S/R FAX MODEM	222

ACCELERATORS

DAYSTAR	
POWERPRO 601 80MHZ W/RAM CACHE	$1441
POWERPRO 601 100MHZ W/CACHE	1231
TURBO 040 40MHZ W/CACHE	679
TURBO 040I 33MHZ W/CACHE NO FPU	605
TURBO 601 66MHZ FOR IICI, IISI W/ADPT	851
TURBO 601 66MHZ IIVX, IIVI, P600	851
TURBO 601 100MHZ FOR IICI, IISI W/ADPT	1165
TURBO 601 100MHZ IIVX, IIVI, P600	1165
POWERCARD 601 100MHZ - *NEW!*	946
SONNET TECHNOLOGY	
QUAD DOUBLER 40MHZ CENTRIS 610	233
QUAD DOUBLER 40MHZ W/FPU CENTRIS 610	339
QUAD DOUBLER 50MHZ W/FPU QUADRA 610	387
QUAD DOUBLER 50MHZ W/FPU CENTRIS 650	387
QUAD DOUBLER 50 MHZ CENTRIS 660AV/7/900	387
BUDGET BOOSTER 25MHZ MAC LC	94
PRESTO 040 LC 50/25MHZ MAC LC/LC II/PERF. 400,405,410,430	193
PRESTO 040 LC 50/25MHZ W/FPU MAC LC/LC II/PERF. 400,405,410,430	290
PRESTO 040 80/40MHZ MAC IICI	290
PRESTO 040 80/40MHZ W/CACHE MAC IICI	387
PRESTO 040 80/40MHZ W/FPU MAC IICI	398
PRESTO 040 80/40MHZ W/CACHE, FPU MAC IICI	485

MONITORS/VIDEO

MONITORS	
SUPERMATCH PRESSVIEW 21T	$3249
SUPERMATCH 21TXL	2245
RADIUS PRECISION VIEW 17"	1005
PRECISION COLOR PIVOT	875
PRECISIONCOLOR 17 RADIUS	1095
INTELLICOLOR 20E	2189
NEC MULTISYNC XV14/15/17	349/479/839
NEC MULTISYNC XE15/17/21	599/1099/1969
NEC MULTISYNC XP17/21	1149/2379
VIDEO	
PRECISIONCOLOR PRO 24X NUBUS	1165
PRECISIONCOLOR PRO 24XK NUBUS	825
THUNDER IV GX-1360 RADIUS	1875
THUNDER IV GX-1152 RADIUS	1635
THUNDER IV GX-1600 RADIUS	2040
RADIUS THUNDER 24 GT	490
SPIGOT POWER AV	820

What type of Memory do I need?

Standard 30-Pin Simms:
Plus, SE, SE 30, Classic/II/Color, LC, /LCII, Perf. 200/400-430/600, Q 900/950, Mac II, IIx, IIcx, IIsi, IIci, IIfx, IIvx, IIvi.

Standard 72-Pin Simms:
Q 605/630, 610, 650, 700, 800/840AV, LCIII/475/630, Perf. 450-560/575 and 6115CD, PMac 61/71/8100, WS 80, WS60, WS 95, WS 6150 and WS 81/ 9150.

168 Pin Dimms:
PowerMac 9500, 8500, 7500, 7200

As Low As $30!

Supra Express 28.8 Plus $159!

DRIVES

APPLE EXTERNAL DRIVES	
APPLE 850MB	$339
APPLE 1.0GB	409
APPLE 2.0GB	925
QUANTUM DRIVES	
Q1080 EXTERNAL FIREBALL	$345
Q540MB EXTERNAL FIREBALL	259
Q850MB EXTERNAL TRAILBLAZER	279
Q CAPELLA 2.2GB	759
Q GRAND PRIX 4.2GB 8.6MN	1049
SYQUEST	
SYQUEST EZ135 W/CARTRIDGE	$225
EZ135MB CARTRIDGE	19.50
IOMEGA DRIVES	
ZIP DRIVE/100MB ZIP CARTRIDGE	$199/19
JAZ 1.0GB DRIVE/1.0GB CARTRIDGE	605/123
FWB	
2X CD RECORDER/WRITER	$1475
4X CD RECORDER/WRITER	3015
NEC	
6XE MULTI-SPIN CD-ROM DRIVE	$515
RUMI SYQUEST	
RUMI 88MB SYQUEST W/CART	$369
RUMI 105MB SYQUEST W/CART	314
RUMI 200MB SYQUEST W/ CART	479
RUMI 270MB SYQUEST W/CART	479
PINNACLE	
APEX 4.6GB OPTICAL DRIVE	$1575
RCD 1000 W/10 RECORDABLE CD'S	1295
RCD 5040	1250

MEMORY

STANDARD 30-PIN SIMMS	
1MB 100NS	$30
1MB 80/70NS	31/33
2MB 80/70NS	57/73
4MB 80/70NS	101/103
8MB 70NS	270
16MB 70NS	455
30-PIN , 36 BIT PC SIMMS	
1MB 70NS	$42
4MB 70NS	155
4MB PAL SIMMS FOR II,IIX	
4MB 80/70NS	$128/128
64-pin SIMMs for IIfx	
1MB 80/70NS	$38/38
4MB 80/70NS	152/154
8MB 70NS	280
16MB 70NS	515
72-PIN SIMMS	
4MB 70/60NS	$87/93
8MB 70/60NS	176/198
16MB 70/60NS	365/367
32MB 60NS	771
72-PIN, 36 BIT PC SIMMS	
4MB 70NS	$147
8MB 70NS	337
16MB 70NS	475
32MB 70NS	977
168-PIN DIMMS	
4MB 60NS	$124
8MB 60NS	198
16MB 60NS	361
32MB 60NS	760
64MB 60NS	1550
PB 5300 SERIES	
8MB RAM	283
12MB RAM	543
16MB RAM	536
32MB RAM	1035
PB 190 SERIES	
4MB 70NS	$203
8MB 70NS	304
12MB 70NS	507
16MB 70NS	599
32MB70NS	1199
PB500 SERIES	
4MB RAM	$146
8MB RAM	267
16MB RAM	543
32MB RAM	1089
PBDUO 210/230 SERIES	
PB DUO-4MB	$165
PB DUO-8MB	297
PB DUO-12MB	473
PB DUO-14MB	543
PB DUO-20MB	777
PB DUO-28MB	1161
FPU'S/MATH COPROCESSOR/VRAM/CACHE	
CENTRIS FPU 25MHZ	$186
FPU 33MHZ DUO/P600	51
FPU COL. CLASSIC 16MHZ	49
LC575 33MHZ MTH COPROC	238
POWERMAC 6100, 7100, 8100 VRAM/CACHE	
256K 80NS VIDEO RAM	$17
512K VIDEO RAM	22
256K CACHE PM 6100, 7100	70
512K CACHE PM 6100, 7100	279
1MB CACHE PM 6100, 7100	789
POWERMAC 72/75/85/9500 VRAM/CACHE	
1MB VRAM 7200/7500/8500	55
2MB VIDEO RAM PM9500	227
256K CACHE DIMM	125
512K CACHE DIMM	185
POWERBOOK BATTERIES	
PB 100 BATTERY/CHARGER	44/111
PB 140-180C BATTERY	57

NETWORKING

FARALLON	
ETHERWAVE NUBUS OR LC	$184
ETHERWAVE AUI TRANSCEIVER	104
ETHERWAVE AAUI TRANSCEIVER	104
ETHERWAVE PRINTER ADAPTER	179
ETHERMAC LC-C	158
DAYNA	
DAYNAPORT CS-T (10BASE-T)	$79
DAYNAPORT CS-T 5 PAK (10BASE-T)	360
DAYNA MINI-HUB F-T	122
DAYNAPORT E/II - T NUBUS 10-T	105
ASANTE	
MACCON + 610E ENET THICK/10BASE-T	$169
MACCON+ 610 THICK/THIN/10BASE-T	197
MC+610E CENTRIS TH/TN	189
FRIENDLY NET ADAPTER THIN	55
FRIENDLY NET ADAPTER THICK	69
10-BASE-T HUB WITH 8THIN PORT	145

Overnight Delivery $7.50 and up
Prices Subject to change without notice
UPS Ground $6 and up
Returns Subject to Approval & Restocking Fee
MasterCard, VISA & Discover, no surcharge
Office Hours: M-F, 7am to 6pm; Sat., 9am to 4pm, PST
MAC Xtra 1075 Bellevue Way NE, Suite 114 Bellevue, WA 98004 - Phone (206) 746-3803
WK022696

MarketPlace

THE SOURCE FOR DIRECT BUYERS OF MACINTOSH PRODUCTS, SERVICES AND INFORMATION

ADVERTISERS' INDEX

Hardware

(Includes Bar Coding, Boards, Communications/Networking, Computer Systems, Peripherals, Used Equipment)

Boss Microelectronics 74
Boxlight Corporation 71
Chip Merchant 67
Compu America 76
Compu Concepts 75
Computer Add-Ons 78
Computer Guys 74
Data Computer Center 75
Data Memory Systems 74
Datatech Remarketing 79
Diamond Computer Resources 74
Dvc/Digital Video Concepts 68
Eritech International 74
GE Capital CRS 80
Griffin Communications 79
ICN 75
Immaculate Consulting 79
Infinity Micro Computers 75
Innovative Micro Products 74
Intermark Technologies 74
Kahlon, Inc. 79
Kelley Computers 78
LA Computer Center 70
Mac 1 International 76
Mac Attack 75
Mac Adapt 78
Mac Base 71
Mac Net 71,78
Mac Rentals 79
Mac Resq 78
Mac Sale International 72
Mac Solutions 74
Macstorm International 78
Macworks 78
Maxed Systems 80
Media Guide 75
Media Store 79
Memory Merchants 78
Micro Products 75
MPD 70
Other World Computing 78
Peripheral Outlet 67
Peripherals & Systems 4 Export 79
Pre-Owned Electronics 80
Que Computers 75
Rapidata 78
Right Computer 78
Shreve Systems 77
Simm Saver Technologies 67
Sonnet Technologies 67
Source Computing 74
Syzygy Electronics, Inc 68
Tahoe Peripherals 69
T.D. Curran 79
V.L. Promac 78
World Micro Systems 74

Software

(Includes Bar Coding, Business Management, CAD-CAM, Communications/Networking, Desktop Publishing, Education, Finance, General, Graphics, Multimedia)

ACI US, Inc. 73
APT Communications, Inc. 66
Digitool 66
Everyware Development 73
Miramar 73
Software Architects 66
Tenon Intersystems 73
Vicom Technology 80

Special Services

(Includes Digital Output Services, Disk Duplication, General, Graphics, Programming/Consulting, Rental/Leasing, Repair/Recovery Services, Toner Recharging, Training)

3E Corp. 80
800wefixmacs 81
Data Recovery technology 81
Drivesavers 80
Dt&t Macintosh Services 81
Isomedia 80
Lazarus Data Recovery 81
On Track Data Recovery 81
Tellan Software 80
Total Recall 80

Accessories

Microstore 81
Moustrak 81

CD ROM

RSL Catalogic Corporation 81

Career Opportunities

Macxperts 81
Scientific Placement 81

ACCOUNT REPRESENTATIVES **800-825-4ADS**

Manuel Fuentes (Asst. Sales Mgr.) ♦ Thomas Foran ♦ Chelsea Morroni ♦ Dara Cook ♦ Jillian McAlley

Mac Networking Solutions

Visit our web site at http://www.aptcom.com/

All-in-One Modular LAN/WAN Router!

- ✔• LocalTalk - Ethernet router
- ✔• Ethernet - Ethernet router
- ✔• High Speed WAN router (56K-T1)
- ✔• Dial Up SW56/ISDN router

The Enterprise Router for K-12...

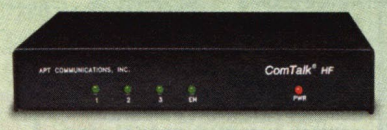
- 2 Ethernet and up to 6 LocalTalk ports.
- WAN ports for interconnecting schools, or connecting to the Internet.
- Easy to manage through a Mac (no complex terminal commands to be typed).
- Meet current needs (and budget) now, and upgrade with more ports later.

Ideal for Graphic Arts/Prepress...

- SW56, ISDN, or T1 access for clients.
- Mac orientated point & click management, instead of type and pray!
- Desktop Dialing software for Mac users, with Applescript support.
- Drag & Drop alias for automated file transfers.
- Expandable to 6 WANs & 2 Ethernets.

ComTalk HX

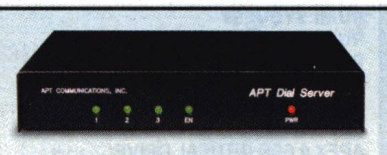
Port Options- Ethernet (2 max); WAN/LocalTalk (6 max)



3 LocalTalks-Ethernet Router

- Lowest cost per LocalTalk router connection.
- Four Mice rating from MacUser (July 1994).
- Highest performance(MacUser July 1994).
- Zone and Device Security.
- Full SNMP support.
- Optional AppleTalk-TCP/IP Gateway.

ComTalk HF for $1500!



3 Port Dial in-Dial out Server

- Dial in ARA 2.0 & 1.0 (auto detection).
- Dial out to on line services or the internet.
- Dial out fax with your favorite fax software.
- Dial out network-to-network ARA.
- Zone & device security by user group.
- Thick, Thin, and 10BaseT Ethernet.

APT Dial Server for $1500!

APT Communications, Inc.: 9607 Dr. Perry Road, Ijamsville, MD 21754
Tel: (800) 842-0626; (301) 874-3305 • **Fax:** (301) 874-5255

SOFTWARE ARCHITECTS INC.

DOS Mounter 95

Speeds the transfer of DOS or Windows files to and from your Macintosh

Why wait when you can **have it now?**

Complete support for **Windows 95** including extended filenames.

The file transfer utility for those who **can't afford to compromise.**

Accelerated for Power Macintosh

Only $99.95 Call 1.800.863.9297 TODAY!

DOS Mounter 95 supports any number or size of DOS/Windows files on SyQuest, Zip, Jaz, Bernoulli, floppies, and all forms of rewritable optical media.

Macintosh® Common Lisp

The fully dynamic programming environment brought to you by Digitool, Inc. and Apple® Computer, Inc.

- Great Product
  - Automatic memory management - no more leaks!
  - Incremental compiler - no more waiting!
  - CLOS - industry standard object system
  - Full access to Mac Toolbox
  - Fast, efficient 68K code (PPC coming!)
  - Small application builder (MCL-AppGen)
- Great Support
- Great Community
- Great Student Price
  - $135.00

http://www.digitool.com/mcl6.html • ftp://ftp.digitool.com • news:comp.lang.lisp.mcl
mailto:info@digitool.com • tel: 617-441-5000 • fax: 617-576-7680

GET YOUR OWN TO

FREE SUBSCRIPTION MacWEEK!

COMPLETE AND RETURN FORM.
A complimentary one-year subscription will be sent to applicants who qualify.
We can't process this form unless you:
1) answer all the questions completely
2) sign and date your form
3) use specific numbers when answering questions requesting quantities. Free subscriptions available in U.S. and Canada only.

Required: Full company name and company address must be written below or application cannot be processed. *Please print.* Military: please specify branch of service and name of base (if applicable).

First Name | Last Name

Title | Business Telephone

Company Name

Division | Mail Stop Delivery

Street Address (Where you work) P.O. Boxes not accepted on this line.

City | State | Zip

Business Fax Number

Optional: DELIVERY ADDRESS (Home or P.O. Box). Enter address below only if your company WILL NOT accept delivery to the company address already listed. Address below is:
☐ A. Home ☐ B. Alternate Company Address
Post Office Box or Street Address

City | State | Zip

- **Please start/continue my FREE subscription to MacWEEK.**
☐ 01. Yes ☐ 02. No

1 What is your organization's primary business activity at this *entire* location?
(Select one only) Write Answer Here ➡

Non-Computer Related
01. Graphic Arts
02. Publishing
03. Advertising, Public Relations, Promotion
04. Digital Media Development
05. Entertainment/ Broadcast
06. Commercial Printer
07. Service Bureau/ Pre-Press
08. Aerospace
09. Architecture, Engineering
10. Telecommunications
11. Government
12. Manufacturing
13. Education: College/ University/Trade
14. Education: High School/Elementary
15. Finance: Banking, Accounting, Insurance, Real Estate, Legal
16. Health, Medical
17. Non-Computer Retailer, Wholesaler, Distributor
18. Research and Development
19. Agriculture, Mining, Construction, Oil
20. Transportation, Utilities

Computer Related
22. Manufacturer (Computers, Software, Peripherals)
23. VAR, VAD, Systems/ Network Integrator
24. Retailer/Distributor
25. Systems House/Data Processing Service
26. Computer Consultant
27. Other Businesses and Services
99. Other_____ (please specify)

2 What is your job function?
(Select one only) Write Answer Here ➡

A. Networking/Data Communications
B. MIS/DP/Information Systems
C. Systems Engineering
D. Telecommunications
E. Graphic Arts/Design
F. Production/Pre-Press
G. Video Production
H. Audio Production
I. Communications/ Publishing/Public Relations/Advertising
J. Engineering/Architecture
K. Science/Research & Development
L. Education/Training/ Development
M. Manufacturing/ Operations/Production/ Quality Control
N. Administration/ Management/Personnel
O. Accounting/Finance/ Legal
P. Sales/Marketing
Q. Purchasing
R. Consulting
Z. Other_____ (please specify)

3 Which of the following brands of systems and/or applications software do you have installed at this *entire* location? (Check all that apply)

Operating Systems
☐01. System 7
☐02. System 6, 5 or earlier
☐03. Unix/Xenix/AUX/AIX
☐04. PowerOpen
☐05. Windows 3.X
☐06. Windows NT
☐07. Windows 95
☐08. NeXTStep
☐09. Solaris
☐10. OSF/Motif
☐11. Other_____ (please specify)

Network Operating Systems
☐13. Novell NetWare
☐14. Unix/NFS
☐15. LAN Manager
☐16. Banyan VINES
☐17. AppleShare
☐18. DEC PathWorks
☐19. Other_____ (please specify)

Groupware
☐21. Lotus Notes
☐22. Windows for Workgroups
☐23. FirstClass
☐24. Novell GroupWise
☐25. Apple Open Collaboration Environment (AOCE)
☐26. Other_____ (please specify)

Database Engines
☐28. Oracle
☐29. Sybase SQL Server
☐30. Ingres
☐31. Informix
☐32. 4D Server
☐33. DB2
☐34. Other_____ (please specify)

On-Line Services
☐36. America Online
☐37. CompuServe
☐38. e-World
☐39. Prodigy
☐40. Internet
☐41. Delphi
☐42. Genie
☐43. Other_____ (please specify)

4 Please indicate the quantities of the computers currently installed and indicate the computers planned for purchase in one year at this *entire* location.

(Write in accurate quantities for all that apply.)

	Currently Installed (Quantity)	PLAN TO PURCHASE
Macintosh/Compatible		
Apple Power Mac 8100	1.	1.☐
Apple Power Mac 7100	2.	2.☐
Apple Power Mac 6100	3.	3.☐
Radius Power Mac Compatible	4.	4.☐
Power Computing Power Mac Compatible	5.	5.☐
Daystar Power Mac Compatible	6.	6.☐
Other Power Mac Compatible	7.	7.☐
Macintosh Quadra	8.	8.☐
Macintosh Centris	9.	9.☐
Macintosh Performa	10.	10.☐
Macintosh PowerBook	11.	11.☐
Macintosh Duo	12.	12.☐
Macintosh Other (II, LC, SE, etc...)	13.	13.☐
Other Mac Compatible	14.	14.☐
Other Desktops		
IBM/Compatible Desktop/Laptop/Notebook	15.	15.☐
PowerPC (Non-Mac Compatible)	16.	16.☐
Workstation (SPARC, MIPS, HP/Apollo, etc.)	17.	17.☐
Other Microcomputers	18.	18.☐

USE NUMBERS ONLY

5A How many servers are installed at this *entire* location? (Use numbers only)

5B How many LANs are installed at this *entire* location? (Use numbers only)

5C How many Macintoshes are connected to the LANs indicated in Question 5B above? (Use numbers only)

6 If applicable: how many Macintoshes are sold, resold, or recommended in one year at this *entire* location? (Answer one only)

A. Retailer: Number sold per year_____
B. Reseller: Number resold per year_____
C. Consultant: Number purchased by your clients through your firm's recommendation per year_____
D. Other: Number sold/resold/recommended per year_____
☐ E. Not Applicable

7A Which of the following Macintosh-related products do you specify, recommend, buy or approve the purchase of? (Check all that apply)

Systems
☐01. Apple Macintoshes
☐02. Mac Compatibles
☐03. IBM Compatible Micros
☐04. Servers
☐05. Workstations
☐06. Minis/Mainframes
☐07. Newton PDA
☐08. Pen-Based Computers

Networking
☐10. LANs
☐11. WANs
☐12. Mac to PC Links
☐13. Mac to Mini/ Mainframe Links
☐14. Mac to Unix Workstation Links
☐15. Modems
☐16. Communication/ Network Software
☐17. Bridges/Routers/ Gateways
☐18. Hubs
☐19. NICS

Printers
☐21. Laser
☐22. Color Laser
☐23. InkJet
☐24. Color InkJet
☐25. Dye Sub
☐26. Thermal Wax
☐27. Plotter
☐28. Portable Printer

Image Input
☐30. Digital Camera
☐31. Flatbed Scanners
☐32. Handheld Scanners
☐33. Slide Scanners
☐34. Drum Scanners
☐35. Black/White Scanners

Displays
☐37. 14 inch
☐38. 15 inch
☐39. 17 inch
☐40. 21+ inch
☐41. LCD Projection Panel
☐42. Presentation Monitors

Peripherals
☐44. UPS
☐45. External Speakers
☐46. Input Devices
☐47. Video Deck
☐48. Image Setter

Storage
☐50. Photo CD
☐51. Magneto Optical
☐52. RAID
☐53. Hard Drive 1 Gig +
☐54. Hard Drive < 1 Gig

Add-In Boards
☐56. CD Recorder
☐57. Memory Boards
☐58. Display Boards
☐59. Video Digitizer Boards
☐60. Accelerator Boards
☐61. Sound Boards
☐62. MIDI
☐63. Video Capture/ Compression
99.☐ None of the above

Your Signature _____

Title _____ Date ___/ ___/____

7B Which of the following systems and/or applications software do you specify, recommend, buy or approve the purchase of? (Check all that apply)

Graphic Arts
☐01. Desktop Publishing
☐02. Electronic Publishing
☐03. Painting/Drawing Programs
☐04. Photo Retouching
☐05. Page Layout
☐06. Illustration Programs
☐07. Fonts
☐08. Pre-Press
☐09. Color Management
☐10. Digital Video
☐11. Other_____ (please specify)

Multimedia
☐13. Authoring Software
☐14. Video Editing
☐15. Sound Editing
☐16. Music Composition/ Editing
☐17. Animation
☐18. Clip Media (Sound and Art)
☐19. Other_____ (please specify)

Presentation Graphics
☐21. Presentation Software
☐22. Multimedia Presentations
☐23. Charting Program
☐24. Other_____ (please specify)

Design/Engineering
☐26. CAD/CAM
☐27. 2/D - 3/D Modeling
☐28. Simulation
☐29. Other_____

Business Applications
☐31. Word Processing
☐32. Spreadsheets
☐33. Databases
☐34. Project Management
☐35. Accounting/Payroll
☐36. Groupware
☐37. Desktop Video Conf.
☐38. Document Management
☐39. Mapping/GIS
☐40. Pen-Based Applications
☐41. Other_____ (please specify)

Systems Management
☐43. Operating Systems
☐44. Utilities
☐45. Applications Development
☐46. CASE
☐47. Programming Languages
☐48. Compilers
☐49. SQL Applications
☐50. Client Server Applications
☐51. Other_____ (please specify)
99.☐ None of the above

8 If you indicated purchasing involvement for computers, computer products or services in Question 7A or Question 7B, for how many Macintoshes do you have this involvement? (Select one only) Write Answer Here ➡

01. 2000+
02. 1000-1999
03. 500-999
04. 100-499
05. 50-99
06. 20-49
07. 10-19
08. 5-9
09. 1-4
99. None

9 For what applications are the Macintoshes at your location used? (Check all that apply)

☐ 01. Graphic Arts
☐ 02. Presentation Graphics
☐ 03. Multimedia
☐ 04. Design/Engineering
☐ 05. Business Applications
☐ 06. Systems Management
☐ 99. Other_____ (please specify)

10 Over the course of one year, do you specify, recommend, buy, or approve the purchase of host systems, desktops, networking products, peripheral equipment and/or software worth: (Write number in box)

1. $5,000,000 or more
2. $2,500,000 to $4,999,999
3. $1,000,000 to $2,499,999
4. $600,000 to $999,999
5. $400,000 to $599,999
6. $200,000 to $399,999
7. $100,000 to $199,999
8. $50,000 to $99,999
9. $25,000 to $49,999
10. $10,000 to $24,999
11. Less than $10,000
99. None

Product Category	For this location (Write number in box)	For other locations (Write number in box)
Host Systems (Mainframes/Minis)	A.	G.
Desktops/Portables (Micros/Workstations)	B.	H.
Networking Products (include Servers)	C.	I.
Peripheral Equipment	D.	J.
Software Products	E.	K.
Service/Support	F.	L.

Indicate additional individuals at this location who might qualify for a FREE subscription to MacWEEK:

Name _____ Title _____

Name _____ Title _____

Name _____ Title _____

PLEASE BE SURE THAT ALL QUESTIONS ARE ANSWERED. V9601
C6TB-7

FOLD HERE FOR MAILING DO NOT STAPLE –TAPE HERE

CHECK ONE ONLY
- ☐ **ADDRESS CORRECTION**
- ☐ **NEW APPLICATION**
- ☐ **REQUALIFICATION**

Place stamp here. Post Office will not deliver without postage.

MacWEEK

P.O. Box 10632
Riverton NJ 08076-0632

FOLD HERE FOR MAILING DO NOT STAPLE –TAPE HERE

ADDRESS CHANGE?

Please provide your old address in the space provided below so that we may update your new mailing address promptly!

First Name | Last Name

Title | Business Telephone

Company Name

Division | Mail Stop Delivery

Street Address (Where you work) P.O. Boxes not accepted on this line.

City | State | Zip

REMINDER:

Complimentary Subscription Application

NOTE: A COMPLIMENTARY SUBSCRIPTION TO MACWEEK WILL BE SENT TO THOSE APPLICANTS WHO QUALIFY. PLEASE ANSWER ALL QUESTIONS COMPLETELY. INCOMPLETE FORMS WILL NOT BE PROCESSED. FOR QUESTIONS REQUESTING QUANTITIES, PLEASE USE SPECIFIC NUMBERS.

SIMMs, DIMMs, PB & DUO MODULES, VRAM... SPECIAL ORDERS!

(800) 808-CHIP (800) 808-2447

THE Chip MERCHANT

Why should YOU pay for fancy advertising??? Buy *quality* memory, not expensive ads!

For Ordering Call: (800) 808-CHIP Ext. 3

For Information Call: (619) 268-4774
4870 Viewridge Ave., San Diego, CA 92123

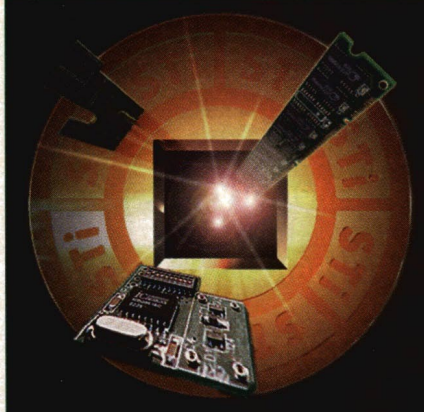
LIFETIME WARRANTY !!!
On NEW & USED
SIMMs, DIMMs, & Printer Memory

We also BUYBACK used memory! Call Ext. 7 for details.

(800) 808-2447 (800) 808-CHIP

SimmSaver Memory Solutions

Visit Us At CeBit Hall 6, Stand C20, Booth CO3



SimmSaver Technology, Inc. (STI) provides owners of Macs, PowerPCs and PowerBooks with quality memory and performance upgrade solutions, including its own Patent Pending SimmSaver series of adapters. STI also is now your source for the highly-rated Princeton line of memory modules, warranted by a Lifetime Guarantee! Call us today for solutions to your memory and performance needs!

NEW! PRINCETON memory for every Mac, PowerPC, and PowerBook. Best price/performance, available in EDO.

NEW! DIMMSAVER/R is the reversible adapter that converts two 72-pin SIMMs into one 2M, 4M, 8M, 16M, 32M, 64M, 128M DIMM!

NEW! CLOCKSLIDER w/thermal fan allows user to increase/decrease CPU performance via software

1-800-636-7281

SimmSaver Technology, Inc. Tel. (316) 264-2244 • Fax: (316) 264-4445 • http://WWW.solgate.com/sti • E-mail: simmsave@solgate.com

SUCCESS

"Year after year, MacWEEK Marketplace has always delivered for us. The ads always pay for themselves."

—Richard Harold, President, Shreve Systems

PUT YOUR AD HERE AND WRITE YOUR OWN MacWEEK SUCCESS STORY. START ADVERTISING NOW!

CALL 800-825-4237 TODAY!

SONNET BEST BUYS TO RUN YOUR MAC FASTER

Accelerate Your Mac to 68040 Speed

Sonnet Presto accelerators increase LC and Mac II series performance 200-600%.

	w/FPU
50/25MHz LC, LC II	$199 $299
80/40MHz IIci, IIsi*	$299 $399
80/40MHz with 128K cache	$399 $499

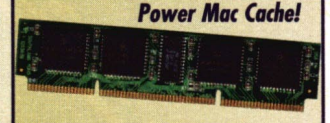
*Adapter req'd $49 NuBus Adapter IIsi $149

Math Coprocessors for 68040 Macs

If you use CAD, Excel, or rendering programs, you will speed through applications like never before.

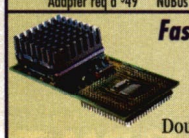
25MHz Q605,C/Q610,C650,LC475,P47X	$149*
33MHz LC575,LC630,P57X,P63X	$199*
33MHz PB190,PB52X,PB54X,Duo 280	$399*

* with LC040 exchange. 68882 upgrades from $49.



Power Mac Cache!

	6100/7100 SIMM	7200/7500/8500 DIMM
256K	$99	$125
512K	—	$199



Fastest Quadra Ever! Plug in a 100/50 MHz 68040 Board and Fly

Double speed with full compatibility. Works in Quadra/Centris 610, 650, 660AV, 700, 900. 80/40MHz unit for Centris 610.

80/40 MHz	$249	w/FPU	$349
100/50 MHz w/FPU			$399

660AV NuBus Adapters.. $99

A Fast 68030 Gives Your Older Mac New Life

Give your older Mac more muscle with a Sonnet Allegro accelerator.

25 MHz Classic	1x72pin SIMM slot	$199
33 MHz SE	4x30pin SIMM slots	$199
33 MHz Mac II/IIx	Supports RAM Doubler	$189
33 MHz LC II	Includes FPU & 16K cache	$149
33 MHz Color Classic	Includes FPU & 16K cache	$149

MasterCard SONNET TECHNOLOGIES, INC., 18004 Sky Park Circle Irvine, California 92714, 714-261-2800 Fax 261-2461 800-786-6260 Sales@Sonnettech.com VISA

PERIPHERAL

PERIPHERAL OUTLET, Inc.

800/259-8989

SAVE MONEY!
Peripheral Outlet will buy your old memory at great prices.

TOLL FREE TECH SUPPORT
Our tech support and installation instructions are the best in the industry!
LIFETIME WARRANTY on all memory products
Order by 6:30PM CST for same day shipping*
Overnight delivery from $8.00 *some restrictions apply

PowerBook 5300/190 Memory
4 / 8 Megabyte upgrade ..... 175.00 / 305.00
16 / 32 Megabyte upgrade ..... 589.00 / 1197.00
40 / 48 Megabyte upgrade ..... CALL

72 Pin Memory for the Mac

	80ns	70ns	60ns
4 Megabyte			
8 Megabyte			
16 MB-Non Composite			
32 MB-Non Composite			

Prices Changing - Call for Best Prices!

PowerBook 500-series Memory
4 / 8 Megabyte upgrade ..... 159.00 / 319.00
16 / 24 Megabyte upgrade ..... 589.00 / 959.00
32 Megabyte upgrade 1179.00

PowerBook 100-series Memory
2, 4, 6, 8, and 10 MB Upgrades - Call for the latest prices!

All PowerBook memory upgrades include necessary tools, static protection, and instructions for safe installation.

Cache Cards, Etc.
Cache Cards for 7200/7500/8500 ..... CALL
256K/512K/1 MB Cache Card for PowerMacs ..... CALL
128K Cache Card for Quadras ..... from 125.00
128K Cache Card for LCIII & Performa 450 ..... 129.00
IIci/IIsi 64K Cache Card 125.00/159.00
Slot-Free Cache Card for LC 475 ..... 195.00
Slot-Free Cache for 660AV, 700, 900, 950 ..... 245.00

PERIPHERAL OUTLET, Inc.
327 East 14th, PO Box 2329 • Ada, Oklahoma 74820
405/332-6581 FAX 405/436-2245 AppleLink-PERIPHERAL
Internet - sales@peripheral.com
HOURS: Monday-Thursday 6AM-7PM CST, Friday 6AM-6PM

INTERNATIONAL TOLL FREE NUMBERS FOR DEALERS ONLY:
Japan 0066 33800 120, UK 0800 962 058, Sweden 020 797 857
Norway 800 12698, France 0590 1997, Australia 1 800 122 764
Spain 900 931 089, Switzerland 155 7608, Italy 1 678 77937
Germany 0130 818 983, Netherlands 0602 26638

168 pin DIMMs for PCI Macs
8 / 16 Megabyte
32 / 64 Megabyte
128 Megabyte
Prices Changing — Call for Best Prices!

Standard 30 pin SIMMs
1, 2, 4, 8, and 16 Megabyte SIMMs
Prices Changing —Call for Best Prices!

Video RAM
1 MB VRAM for 7200/7500/8500 ..... 72.00
2 MB VRAM for ATI Video Card 199.00
256K/512K VRAM 80ns ..... 21.00 / 29.00

68882 Math Coprocessors
68882 25 MHz FPU 49.00
68882 33 MHz FPU 59.00
68882 50 MHz FPU 99.00
25 MHz for Mac LC/LCII/Classic II 55.00
20 MHz w/2 slots for Mac IIsi 119.00

Newton Upgrade Products
512K Static RAM Storage Card 89.00
1 Megabyte Static RAM Storage Card 124.00
2 Megabyte Static RAM Storage Card 235.00
2/4 Megabyte Flash Storage Card ..... 99.00 / 169.00
8 Megabyte Flash Storage Card 299.00
16 Megabyte Flash Storage Card 565.00

Duo-series Memory
4 / 8 Megabyte upgrade ..... 169.00 / 289.00
12 / 14 Megabyte upgrade ..... 440.00 / 496.00
20 / 28 Megabyte upgrade ..... 699.00 / 989.00

Miscellaneous
68040 processors with FPU ..... CALL
LaserWriter 320 2,4,6MB upgrades ..... CALL
LaserWriter Pro 810 4MB/8 MB upgrades 255/419
T.I. MicroLaser 1 MB 39.00
Mac Classic 1 MB Board 75.00
68851 16MHz PMMU 89.00
if requested, MODE 32 software included free w/PMMU
Mac Portable 3-7 MB Cards ..... CALL

PowerMacintosh Accelerators
Call us for ways to economically increase the speed of any PowerMac by 30-40%!

68030 50 MHz Accelerator $339

MacUser ★★★★½

Speed increases of up to 400% with the DiiMOCache 50MHz 68030 Accelerator. The DiiMO outperforms the DayStar PowerCache 50MHz and also most of the 68040 25MHz accelerators. The DiiMO 50MHz runs on the LC, LCII, LCIII, II, IIx, IIcx, IIci, IIvi, IIsi, SE/30, and the Performa 600/400 series. Call for adapter prices.

DiiMOCache 50MHz Accelerator without FPU $339.00
DiiMOCache 50MHz Accelerator with FPU $399.00

68040 Processor with FPU $229
For the Centris and Quadra 605, 610, 650 and 660AV, and the Performa 475/476 and LC 475.
33MHz for Quadra 650 and LC 575 ..... CALL
40MHz ..... CALL

We accept Visa/MC/Amex/Discover, and COD Cashiers check upon approval. Educational, Government, and Fortune 500 P/Os accepted upon approval. Due to volatility in the market all prices and availability are subject to change without notice.

Memory - Buy, Sell or Trade

30 pin
72 pin
PB 1xx
DUO
PB 5xx
DIMM
VRAM

We want your used RAM, SIMMs, SIPPS
- 30 or 72 pin SIMMs or SIPPs
- Proprietary Configurations
- Laptop and Notebook Memory
- Any Configuration
- Any Size - even lowly 256K
- Any Speed
- Through Hole, or Surface Mount
- Working or Broken
- Any Quantity

256K
512K
1MB
2MB
4MB
8MB
16MB
32MB
64MB
Any!

Our Prices
2x32 70ns $209
4x32 60ns $445
2x8 80ns $57
4x8 80ns $109
16x8 70ns $389
PB 140 6MB $149
Clip Accelerators $49

We stock, for trade-in or Purchase:
1x32,1x36 80/70/60ns
2x32,2x36 80/70/60ns
4x32,4x36 70/60ns
8x32,8x36 70/60ns
Macintosh DIMMs
1x8/9, 2x8, 4x8/9, 16x8/9
Powerbook 1xx, Duo, Powerbook 5xx
30 day Money Back Guarantee
Lifetime Guarantee

Macintosh Memory Experts

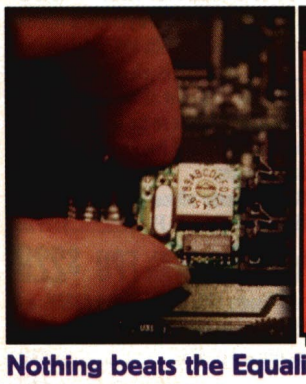
It's easy - in a single toll-free call, one of our friendly operators will help you identify the value of your old memory.
Once you have a price quote, send your memory to us, instructing us to issue a check, or trade-in for usable memory.

We produce a fully itemized listing of the parts we've received, and publish a buyback price sheet - just so you can compare and confirm- you'll see why we're the ones written about in PC World and Der Spiegel!

Trade In, or just Sell - They've done it:
MIT
AARP
Hughes Aircraft
Harvard University
The 3M Corporation
The Whirlpool Corporation
US Department of the Treasury
We've even satisfied Charlie Darling!

MEMORY TRADERS
1-800-315-7807
703-243-4006 FAX 703-522-6626
1117 North 19th Street Suite 1201
Arlington, VA 22209
MasterCard VISA

POWERMAC ACCELERATION



6100, 7100, Performa 611x, 8100/100
- 16 dial-selectable speeds
- Low noise, high output CPU fan
- Detailed manual
- Bench testing software disk
- Requires NO expansion slots
- Installs in under 5 minutes
- NO permanent modification
- Toll-free technical support
- 30-day money-back guarantee
- 1-year warranty

6100 up to 90MHz
Performa 611x up to 90MHz
7100/66 up to 90MHz
7100/80 up to 93MHz
8100/100 up to 126MHz
$79.95
Do not be misled. With thousands sold, accept only the DVC Equalizer™!

Nothing beats the Equalizer. NOTHING! Get the best and forget the rest.

L2 CACHE CARDS
6100/7100/8100/Performa 611X
256K.....$125
512K.....$259
1024K.....as low as.....$299
7200/7500/8500
256K DIMM Cache.....$150
512K DIMM Cache.....$255

DVC Equalizer for 9500/8500
- 32 dial-selectable speed settings
- Protection circuit prevents installation damage
- LED light indicates correct installation
- NO permanent modifications
- Requires NO expansion slots

UP TO 175MHz $79.95

7200/7500/8500 VRAM 1Mb.....$75
DIMM Saver/R (SIMM to DIMM converter)...$49

VISA MasterCard AMERICAN EXPRESS
800.889.5137 DVC HARDWARE™
417.889.5113 Phone 417.889.7980 Fax
E-Mail: DVCBOOSTER@AOL.COM
FedEx All orders delivered next day

INFLUENCE

"MacWEEK Marketplace works for us because MacWEEK readers call the shots. You could probably multiply the circulation by ten, since MacWEEK readers influence many, many more people in their companies."

—Jay Hagan, Co-Owner, DriveSavers, Inc.

PUT YOUR AD HERE AND WRITE YOUR OWN MacWEEK SUCCESS STORY.
START ADVERTISING NOW! CALL 800-825-4237 TODAY!

Tahoe Peripherals

WILDEST MEMORY PRICES IN THE WEST!

1-800-288-6040

Mon - Fri. 6am - 6pm NEW Sat. 8 am - 12 noon PST

- Resellers Welcome Order Line: ext 1776
- Gov't Order Line: ext1954
- International Order Line: 001-702-832-3600
- Fax: 702- 832-3611

Kingston TECHNOLOGY CORPORATION

POWERBOOK 500/5300/190
(Uses self refresh DRAM)

Kingston 4MB	188	—	147
Kingston 8MB	295	285	275
Kingston 16MB	575	549	540
Kingston 24MB	850	810	—
Kingston 32MB	1120	1055	1065

Kingston Technical Support 714 435 2639

Memory

168-Pin DIMMS
For PowerMac 9500, 8500, 7500, 7200

4MB 60NS	4764	125
8MB 60NS	8764	195
16MB 60NS	16764	375
32MB 60NS	32764	799
64MB 60NS	64764	1727

72 Pin 36 bit SIMMS

4MB 70NS	43670	162
8MB 70NS	83670	240
16MB 70NS	163670	475
32MB 70NS	323670	958

72 Pin SIMMS

4MB 70/60NS	4032/4632	94/96
8MB 70/60NS	8032/8632	176/180
16MB 70/60NS	16732/16602	338/340
32MB 60NS	32632	790

64 -Pin SIMMS for IIfx

1MB 80/70NS	8080/8070	43
4MB 80/70NS	4080/4087	155
8MB 70NS	N8887	365
16MB 70NS	N1680	665

4MB PAL SIMMS for II,IIx

4MB 80/70NS	4100/4107	149/151

STANDARD 30-pin SIMMs

1MB 100NS	8001	27
1MB 80/70NS	8000/8007	29/35
2MB 80/70NS	2000/2007	65/768
4MB 80/70NS	4000/4070	99/105
8MB 70NS	8888	315
16MB 70NS	1601	599

30-pin 36-bit SIMMs

1MB 70NS	9070	45
4MB 70ns	8000/8007	159

PowerMac VRAM/CACHE 6100,7100,8100

256K 80NS Video RAM	1516	17
512K Video RAM	1500	22
256K Cache Card PM6100,7100 PM256		107
512K Cache Card PM6100,7100 PM512		411
1MB Cache Card PM600, 7100 PM1MG		792

PowerMac VRAM/CACHE 7200, 7500, 8500, 9500

1MB VRAM PM7200/7500/8500	1517	58
2MB Video RAM PM9500	N7VR2MB	159

Printer memory

APPLE

Laserwriter II,IINTX, IINTX-J	4MB Kit	TPIMAPELL	171
Laserwriter IIF, IIG	4MB Kit	TP4MM IICI	109
	16MB Kit	TP16MMIICI	495
Laserwriter4/600	4 MB	TPA--LW600/4	165
Laserwriter16/1600PS	4 MB	TP1M3270	105
	8MB	TP2M3270	208
	16MB	TP4M3260L	425
Laserwriter Pro 600, 630	4MB	TP1M3270	105
	16MB	TP4M3260L	425
Laserwriter Pro 810	4MB	TPA-LW810/4	167
	8MB	TPA-LW810/8	299
Laserwriter Select 300	1MB	TP1M8270	29
	4MB	TP4M8870	115
Laserwriter Select 310	1MB	NA	37
	4MB	NA	105
Laserwriter Select 320	2MB	NA	102
	4MB	NA	187
	6MB	NA	260
Laserwriter Select 360	16MB	TP16MSEL360	422

TEXAS INSTRUMENTS

MICROLASER PS, TURBO XL	1MB	NA	55
	1MB	NA	60
MICROWRITER PS17, PS23, PS3	2MB	NA	106
MICROLASER PRO E,	1MB	NA	66
POWER PRO	2MB	NA	106
PRO 600, PS23, PS65, 600	4MB	NA	225
	8MB	NA	383

EPSON

ACTIONLASER 1000, 1500	512K Kit	NA	20
EPL 5000, 5200	2MB Module	NA	84
ACTIONLASER 1100, 1400	1MB	NA	37
EPL 3000, 5200 +	2MB	NA	69
	4MB	NA	105
ACTIONLASER 1600	1MB	NA	37
EPL 5600, 9000	2MB	NA	69
	4MB	NA	105
	8MB	NA	203
	16MB	NA	425
	32MB	NA	839

QMS

PS-860, 1700, 1725	2MB	TP4MQMS860	107
COLORSCRIPT 210-230	8MB	TP8QMS860	208
QMS-1000 MAGIC COLOR 1060, 1660, 3260			
	4MB	TP4MQMS 1060	107
	8MB	TP8MQMS 1060	208
	16MB	TP16MQMS 1060	430
	32MB	TP32MQMS 1060	846

Modems

GLOBAL VILLAGE
Global Village Communication

Global Village TelePort Platinum	$228
Global Village TelePort Gold II	$108
Global Village PowerPort Platinum PB	$320
Global Village PowerPort Mercury PB for the 500 Series and Duo's	$320
SUPRA 14.4 S/R Fax	$83
SUPRA 28.8 PB Fax/Modem	$166
SUPRA 28.8 V.34 S/R Fax Modem	$153
SUPRA V.32 BIS PB Fax	$162
SUPRAEXPRESS 144 Plus/28.8 Ext. V.34	$83/152

US Robotics

Sportster True 28.8 V.34 Internet Bundle	$199
Sportster 14,400 Mac & Fax	$104

Scanners & Printers

Polaroid

SLIDE SCANNER
Polaroid (35mm slide scanner) up to2700 dpi in under a minute $1549

POLARVIEW LCD PANELS
Project Your Workstation Graphics from Computer to screen.
LCD Panels project computer or video images in real - time.

HR 2500 New Polarview (1024x768 pixel res.16.7 million colors)	$7999
HR 3000 LCD Ad Planner (16.7million colors: active-matrix TFT technology)	$4299
HR 1800 LCD Panel Line Art (256,000 colors: active-matrix TFT technology)	$3200
HR1500 LCD Ad Planner (256,000 colors: active-matrix TFT technology)	$2400

All the above Panels come with a carrying case

POLAROID POLARVIEW LCD PROJECTORS
Give your presentation impact with Polaroid's new Polaview 105, 95, 90 and LCD Projectors. Computer and /or video graphics directtly onto a meeting room screen.

Polarview 95	$7400	Polarview 85E	$5100
Polarview 80	$5999	Polarview 90	$6100

AGFA
AGFA SCANNERS

Studioscan IIsi (new speed improved)	$949
Studioscan IIsi Transparency Adaptor	$379
Arcus II	$2499

QMS MAGICOLOR CX
Laser printer series Call for Prices

VISIONEER
(models for Mac & PC)
Visioneer Paperport
(models for Mac & PC)

GCC TECHNOLOGIES
Laser Printers

ELITE 600	$1347
ELITE 616	$2520
ELITE 808	$2700
ELITE 1208	$3988

'TORAY' PHASEWRITER DUAL
Optical Storage Solutions

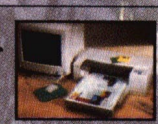
The Phasewriter Dual PD drive is a multimedia desktop system that eliminate the current need for an internal CD-Rom and external add-on storage peripheral by combining the two popular functions - at less than the price

• 650Mb capacity per cartridge • Advanced Phase Change Rewritable Technology- allows you to write to the same cartride again and again • Quad Speed CD Rom player • SCSI-II • Device software included

Call for latest prices

EPSON Stylus PRO XL
Large-format printer Laser printer series

- Photo Quality
- Wide Format
- 720 x 720dpi
- Exclusive ink Jet Technology



Networking

ASANTÉ

Micro AsantePrint, 10BT	$287
Micro AsantePrint, Thk/Thn/10BT	$287
NuBus MacII/Pref 600 Thk/10BT	$109
NuBus MacII/Pref 600 Thk/Thn	$115
MacLC/Q600 Color Classic Thn	$109
MacLC/Q600 Color Classic 10BT	$90

Same Day Shipping
FREE Shipping
Call for details

- All product meets or exceeds Apple's original specs.
- All modules use NEW DRAM late 1994 datecode
- All deliveries will be made on promise date or WE PAY shipping.
- All memory modules carry a LIFETIME WARRANTY.

Tahoe Peripherals is a wholly owned subsidiary of the Datrontech Group, a publicly traded corporation

All prices reflect cash discount. Prices subject to change without notice. NEVADA residents only must add applicable sales tax.

Credit cards are verified for fraudulent use.

VISA MasterCard DISCOVER NOVUS

Tahoe Peripherals, 999 Tahoe Blvd, # 301 Incline Village, NV 89451

Premier

LA's LEADING COMPUTER STORE!

LA COMPUTER CENTER

(800) 689-3933

ORDERS ONLY!

(310) 473-2535 FAX (310) 312-9041

E-mail us at:

lacc@directnet.com

INTERNATIONAL ORDERS WELCOME!

Call for Quantity Pricing!

WE WANT TO BUY YOUR NEW & USED APPLE PRODUCTS
UNIVERSITY, SCHOOLS, GOV'T & FORTUNE 1000 P.O.'S ACCEPTED!

CLEARANCE SPECIAL

STYLEWRITER
1200 $199
2400 $299

WE ALSO CARRY

TOSHIBA IBM COMPAQ

GE 4 YEAR ON SITE WARRANTY!

ASK YOUR SALES REP REGARDING GE EXTENDED ON SITE WARRANTY

$100 to $350	$351 to $350	$701 to $1200	$1201 to $2000	$2001 to $3000	$4001 to $5000
$49.95	$79.95	$139.95	$169.95	$199.95	$259.95

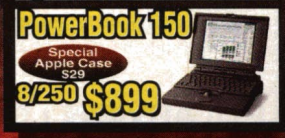
FedEx NEXT DAY AND SAME DAY SHIPPING AVAILABLE. WE SHIP WORLDWIDE!

OPEN SATURDAY, VISIT OUR SHOWROOM!

12002 PICO BLVD. WEST LOS ANGELES, CA 90064

* Reflects Refurbished Units. Prices Subject To Change Without Notice. CALL FOR LATEST PRICE. ALL PRICES REFLECT A 3% CASH DISCOUNT Credit Cards Will Be Verified For Fraudulent Use.

POWERBOOKS



5300CS	8/500	$1999
5300CS	16/500	$2299
5300CS	16/750	$2699
5300C	8/500	$2899
190	8/500	$1499
190CS	8/500	$1799
180C	4/160/mod	$1899*
540	4/240	$1649*
540C	4/320	$2199*
540C	12/320/mod	$2799*
520	4/240	$1049
520C	4/240	$1399*
520C	4/240/mod	$1599*
520C	12/320/mod	$1899*
Duo2300C	8/750	$3299
Duo2300C	20/1.1G/fax	$4199
Duo230	4/80	$699*
Duo250	4/200	$1149*
Duo250	12/200/Mod	$1699*
Duo280	12/240/Mod	$2299
Duo Dock		$399*
Duo Dock II		$499*
RasterOps		
DuoMate 8 PB Dock		$199

PRINTERS

LaserWriter 4/600	$769
LaserWriter Personal	$329*
laserWriter Select 360 w/Toner	$1099
LaserWriter 16/600/PS	$2099
Color LaserWriter 12/600	$5999
Portable Stylewriter	$239*
StyleWriter 2200	$369
StyleWriter 1200	$179*
STAR COLOR PRINTER FOR MAC (10+ $99/ea.)	$119

MONITORS

SONY

1425 14"	$389
15SXI/15SFII 15"	$429/519
17SFII 17"	$859
GDM 17SEII	$1049
20SFII 20"	$1759

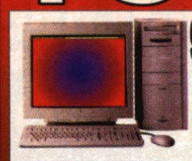
RADIUS

PrecColor 17/20	$699*/1299*
SuprMtch 17"/20"	$599*/799*
Intellicolor 20E	$1199*

APPLE

17" 1705	$649
17" 1710	$899
17" 1710AV	$949
20" MultiScan	$1799

POWERMACS



7500/100 16/500/CD $2299

6100/66	8/500/CD	$1199
6100/66/dos	16/500/CD	$1899
7100/80	8/700/CD	$1299
7100/80AV	16/700/CD	$1899
8100/100	8/700	$2199
8100/100	8/700	$2099*
8100/100	16/1GIG/CD	$2499*
8100/100AV	16/1GIG/CD	$2699
8100/110	16/2GIG/CD	$2899
7200/75	8/500/CD	$1249
7200/90	16/500/CD	$1649
8500/120	16/2GIG/CD	$3899
9500/120	16/1GIG/CD	$3299
9500/132	16/2GIG/CD	$3699

QUADRAS

610	8/230/CD	$999*
630	4/250	$749*
650	8/230	$1399*
80040/0	DEMO UNIT	$1799
950	8/0 OR 8/230	$1599/1699

WGS & WORKSTATIONS

9150/80	8/2GIG/CD	$3299
8150/80	16/1GIG/CD/DAT	$2599
8150/80	8/500/AS	$2499
8150/80	16/1G/CD/DAT/AS	$3099
95/80	32/2G/256K/DAT/AS	$3399

PERFORMAS

630CD	8/250/CD/14" Mon	$929*
636	4/250 CPU ONLY	$849
636CD	8/250/CD/14" Mon	$949*
640CD	12/500/CD/DOS	$CALL
5215CD	8/1GIG/CD	$1649
6116CD	8/700/CD	$1399
6200CD	8/1GIG/CD	$1699
6205CD	8/1GIG/CD	$1899
6220CD	16/1GIG/CD	$1749
6230CD	16/1GIG/CD	$2349
6300CD	16/1GIG/CD	$2299

PERFORMA 550 BUILT-IN MONITOR 5/160/CD COMPLETE SYSTEM $749*

ORIGINAL APPLE 700MB HARD DRIVE!
INTERNAL $169 EXTERNAL $229

MICRO PRODUCT DISTRIBUTORS

PowerMacs

7200/75 8/500 CD	1,195.
7200/90 16/500 CD	1,622.
7500/100 16/500 CD	2,345.
7500/100 16/1000 CD	2,405.
8500/120 16/1000 CD	3,580.
8500/120 16/2000 CD	4,110.
9500/132 16/1000 CD w/Video	3,450.
9500/132 16/2000 CD	3,749.
6100/66 8/500 CD	1,044.
7100/80 8/700 CD	1,434.

PowerBooks

5300/100 8/500	1,315.
5300cs/100 8/500	2,137.
5300cs/100 16/750	2,744.
5300c/100 8/500	3,109.
5300c/100 16/750	3,410.
5300ce/117 32/1.1GB	5,395.
Duo 2300c/100	Call
190/66 8/500	1,314.
190cs/66 8/500	1,861.

Performa 630CD
8/500 (CPU only)

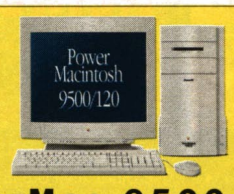
$795.

Printers

StyleWriter 1200	233.
Color StyleWriter 2400	365.
Color StyleWriter 2200	375.
Personal LaserWriter 320	760.
LaserWriter Select 360	1,164.
LaserWriter Pro 16/600	1,999.
LaserWriter 4/600ps	806.
Color LaserWriter 12/600	6,107.

Performas

631CD 8/500	1,330.
640CD 12/500	1,408.
5215CD 8/1GB	1,714.
6116CD 8/700	1,578.
6200CD 8/1GB	1,320.
6205CD 8/1GB	1,949.
6220CD/TV 16/1GB	1,857.
6300CD 16/1.2GB	2,600.



PowerMac 9500/120
16/1000 CD
$3,295.

Displays

14" Multiple Scan	325.
15" Multiple Scan	359.
Apple Vision 1710	864.
1705 Multiple Scan	682.
Apple Vision 1710AV	962.
20" Multiple Scan	1,819.

Storage Devices

Quantum 730MB HD Ext	210.
Quantum 1GB HD Ext	290.
Quantum 2GB HD Ext	710.
SyQuest 135MB EZ Drive	229.
SyQuest 88MB Ext	339.
SyQuest 200MB Ext	479.
SyQuest 270MB Ext	458.

FREE w/your Apple CD 600e for $298.

While supplies last

Free FedEx 2nd Day on CPU's

Memory

4MB, 72-pin	85.
8MB, 72-pin	173.
16MB, 72-pin	319.
32MB, 72-pin	695.
4MB Dimm	119.
8MB Dimm	175.
16MB Dimm	339.
32MB Dimm	695.
64MB Dimm	1,595.

Please call for PowerBook Memory.

Your PowerMac Number One Source

30-Day Money Back Guarantee(*)

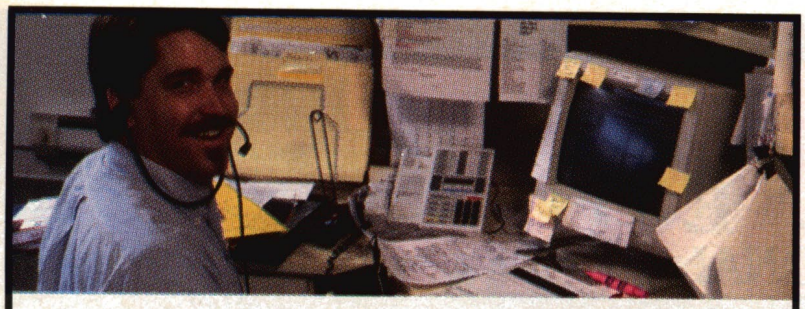
Visit our Web Site at : http://www.shadow.net/~mpd

Please call for Custom Configurations. Prices reflect 3% discount for CASH ONLY!. Prices subject to change without notice. Please call for latest prices. (*) Certain conditions apply. All Major Credit Cards accepted. International orders Welcome.

Call (305) 477-4441 or Fax Us at (305) 477-4602.

- 48 Hours Turn-Around on Warranty Repairs.
- School & Government PO's Welcome.
- Leasing Terms Available, Call for Details

1-800-993-5673



"Boxlight means great prices, superb products, and experts to help you choose exactly the right system."

PANELS FROM $1999
PROJECTORS FROM $3999
GOODBYE SLIDES!

Project your full-color monitor image onto a screen or wall

ProColor™ 3080

- Brightest – use even in lit rooms
- Mac or PC, Video plus Audio
- Only 16 lbs. travel weight
- Clarity sharp as 35 mm slides.

1-800-762-5757

BOXLIGHT™ DIRECT

Government: (800) 497-4009
Resellers: (800) 736-6956
International: (360) 779-7901

The Inc. 500 logo is a registered trademark of Goldhirsh Group, Inc.

MACBASE™ U.S.A

1941 B Freeman Signal Hills, CA 90804
Since 1988
HOURS : M-F 8-6 PST SAT 10-2
(800)951-1230
International (310)498-1230 FAX (310)498-0032

6100/66Mhz 8MB/500HD
Blow Out
$979
Mon. & Kb sold separately

FedEx **WEEKLY SPECIALS**

PowerBook 540c

The PowerBook 540c is one of Apple's top of the line color PowerBook computer, combining the high performance Motorola 68LC040 processor with an active matrix color display • It has 68LC040 processor running at 66/33 Mhz. upgradable to PowerPC processor • Built in ethernet and video out port supporting most Apple monitor display. 4 Mb of RAM expandable to 36 MB • Optional 19.2bps Global Village fax modem• High capacity Type II nickel metal hydride • Weight : 7.3 lbs

*Apple Factory Refurbished

Mac CPUs

6100/66 8/500/CD	$1098
6100/66 16/500/CD DOS	$1599
7200/75 8/500/CD	$1229
7200/90 8/500/CD	$1419
7500/100 16/500/CD	$2298
7500/100 16/1GB/CD	$2499
8500/120 16/1GB/CD	$3489
9500/132 16/1GB/CD/VI	$3499

PERFORMA

Performa 6116 8/700/CD	$1469
Performa 5215 8/1GB/CD	$1699
P6200 8/1GB/CD	$1498
Performa 6220 16/1GB/CD/TV	$1699
Performa 6230 16/1GB/CD/ M	$1769
Performa 6290/100 MHZ	$1999
Performa 6300 16/1GB/CD	$2279

CALL US FOR CURRENT PRICING

PowerBook

PB 5300ce 32/1.1GB	$4799
PB 5300c 8/500	$3019
PB 5300c 16/750	SEE SPECIALS
PB 5300cs 8/500	SEE SPECIALS
PB 5300cs 16/750	$2759
PB 5300 8/500	$1369
PB 190/66 8/500	$1349
PB 190cs/66 8/500	$1879
DUO 2300c 8/750	$3099
PB DUO 2300c 20/1GB/M	$3999

Custom Configuration

7200/75 24/1GB/CD	$1938
7200/90 32/1GB/CD	$2179
7500/100 40/1GB/CD	$3359
7500/100 64/4GB/CD	$4399
8100/110 80/4GB/CD	$4859
8500/120 128/2GB/CD	$6959
9500/132 64/2GB/CD	$5098

4MB/320HD 12/500/MOD
$2219* Blow Out **$2758***

7100/80 8/700/CD	$1289
PERFORMA 636 8/250/KB	$649
PERFORMA 630CD 8/250/CD/KB REF	$789
8500/120 16/2GB-Seagate Barracuda/CD	$4098
9500/120 16/1GB/CD BEST BUY	$3199
8100/100 8MB/700 HD	$1899
8100/110 16/2GB/CD	$2859
PB 5300CE/117 32/1.2GB	$4699
PB 5300C/100 16/750	$3249
PB 5300CS/100 8/500 Limited In Stock	$2089
PB 5300/100 8/500	$1369
PB 520 4/240	$1399
LaserWriter 4/600 PS	$799
Color StyleWriter 2400	$329
StyleWriter 1200	$229
Apple PB 320MB HD, 2.5"	$149

MEMORY

MEMORY PRODUCTS ARE NEW W/ LIFETIME WARRANTY

MAC 72-PIN

4MB 60ns	$115
8MB 60ns	$219
16MB 60ns 2K	$419
32MB 60ns 2K	$799

Kingston Memory Available

7200/7500/8500/9500

8MB DIMM	$239
16MB DIMM	$429
32MB DIMM KINGSTON	$795
64MB DIMM	$1599
1MB V-RAM KINGSTON	$65
256K L2 Cache KINGSTON	$119
512K L2 Cache KINGSTON	$179

PB5300 & 190 SERIES

4MB UPGRADE	$179
8MB UPGRADE KINGSTON	$299
16MB UPGRADE	$549
32MB UPGRADE	$1019

PB 500 SERIES

4MB UPGRADE	$189
8MB UPGRADE	$289
16MB UPGRADE In Stock	$539
32MB UPGRADE	$1089

Prices reflect cash discounts and subject to change without notice.

GROWTH

"The volume, referrals and repeat business are tremendous from MacWEEK Marketplace customers. We never miss an issue of MacWEEK. It generates a tremendous amount of revenue for us and has fueled our growth."

—Kelley Leopard, Principal, Total Recall, Inc.

PUT YOUR AD HERE AND WRITE YOUR OWN MacWEEK SUCCESS STORY.
START ADVERTISING NOW! CALL 800-825-4237 TODAY!

FREE DELIVERY

POWER MACS	PRICE	LEASE
Power Mac 9500[132] 16/1GB/CD	3,599	95
Power Mac 8500[120] 16/1GB/CD	3,699	95
Power Mac 7500[100] 16/1GB/CD	2,599	71
Power Mac 7200[90] 8/500/CD	1,499	40
Power Mac 7200[75] 8/500/CD	1,249	31
Performa 6200[75] 8/1GB/CD*	1,469	38
Performa 5200[75] 8/1GB/CD/FAX	1,699	51

POWER BOOKS	PRICE	LEASE
Power Book 5300[100] 8/500	1,649	43
Power Book 5300[100] CS 8/500	2,399	60
Power Book 5300[100] C 16/750	3,599	95

PRINTERS & ACCESS.	PRICE	LEASE
Laserwriter Color	5,700	139
Laserwriter 4/600	860	22
Stylewriter 2400 Color	369	10
Apple 20" Monitor	1,949	49
Apple 15" Monitor	459	12
Design Keyboard	80	2
Apple CD 600 Ext	299	8

GCC PRINTERS	PRICE	LEASE
Elite XL 616	2,470	62
Elite XL 808	2,850	71
Elite XL 1208	3,749	93

SyQuest	CARTRIDGES	DRIVE
88MB	47	208
200MB	68	383
270MB	60	383
EZ 135MB	20	208

SCANNERS	PRICE	LEASE
Microtek II	399	10
Microtek II HR	399	10
UMAX VISTA S 6	599	15
UMAX VISTA S 8	699	18

HARDRIVES	
540 MB	159
840 MB	199
1080 MB	259
2.2 GB	629
4.3 GB	989

American Express Cards MasterCard VISA DISCOVER

NO CREDIT CARD SURCHARGES!

Lease quotes are based on a 60 months lease program, 10 % buyout option at the end of the term. - Other programs available.

MAC SPOT **1800 680-1112**

TOTALLY FREE DELIVERY BY FedEx *FREE 2nd DAY DELIVERY - ALL RETURN SHIPMENT EXCLUDED

FAX 305-591-4391 *CPU Only

Premier

LATEST Mac S·A·L·E INTERNATIONAL SPECIALS

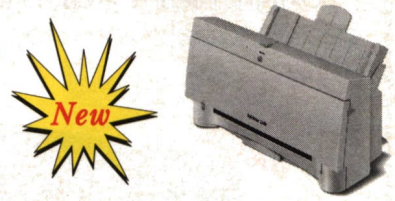
* HUGE SAVINGS ON NEW *

PowerMac 7200
(CPU only)
75MHz 8/500/CD- $1,399.00
90MHz 16/500/CD- $1,799.00
Save $50 with Monitor & Keyboard Purchase

• Personal LaserWriter NTR Logic Board UPGRADE With Trade-in - ONLY $99.00

New MS Word/Excel Bundle - $79.00
ONLY $49.00 With Any CPU

New MicroSoft Works V2.00 - $15.00
ONLY $10.00 With Any CPU Purchase



StyleWriter 1200
with Ink Cartridge & Cable
► $199.00 ◄

* NEW *

PwrMac 9500/120 16/1GB/CD	$3165.00	Apple 15" Multiple Scan Display	$375.00	MacAlly Ext. Kybd.	$55.00
Performa 5215 8/1GB/CD	$1699.00	Apple 14" Multiple Scan Display	$325.00	External Hard Drive Enclosure	$69.00
Apple StyleWriter 2200	$350.00	NEC CD-Rom Ext. Drive (1X)	$35.00	Apple PowerBook Int. Data/Fax Modem	$25.00
PowerBook 140-180c Battery	$45.00	Laser IIg Logic Bd (Upgrade)	$450.00	Apple Toner for Select 300,310,360	$69.00

* USED/*REFURBISHED *

(Other Configurations Available)

Desktop CPU's

Mac Plus No Kbd or Mouse		$99.00
Mac SE (800K)	1/0	$199.00
Mac SE (FDHD)	1/0	$299.00
•Mac II	4/0	$199.00
•Mac II	4/40	$225.00
•Mac IICX	4/80	$325.00
•Mac IIFX	4/80	$525.00
•Add 8 Bit Video Card		$50.00
Mac LC	2/40	$299.00
Mac LC II	4/80	$375.00
Mac IISI	5/80	$349.00
Mac IISI	5/160	$379.00
Mac IICI	4/80	$395.00
Mac IIVX	4/80	$549.00
Mac Portable	2/40	$350.00
Pwr Mac 6100/60	8/350	$925.00
Pwr Mac 7100/80	8/500	$1179.00
Centris 610	4/230	$575.00
Centris 650	4/230	$699.00
Centris 660AV	8/230/CD	$999.00
Quadra 650	8/230	$1199.00
Quadra 700	4/80	$699.00
Quadra 800	8/500	$1125.00
Quadra 950	16/500	$1499.00
Performa 200	4/80	$399.00
Performa 400	4/80	$375.00
Performa 600	5/80/CD	$649.00

(Performa's Are CPU Only)

PowerBooks

PB 100	4/40	$499.00
PB 145	4/80	$799.00
PB 145B	4/80	$799.00
*PB 150	4/120	$899.00
PB 160	4/80	$949.00
PB 165	4/160	$1029.00
PB 165C	4/80	$1299.00
PB 180	4/120	$1350.00
*PB 520	4/160	$1099.00
Duo 210	4/80	$599.00
Duo 230	4/80	$749.00
Duo Dock		$349.00
Duo Floppy Adapter		$59.00
Duo Battery Recharger		$45.00
PB Battery Recharger		$35.00
PB Int. Fax/Data Mdm		$25.00
PB 14.4 Express Mdm		$79.00
PB AC Adapters		$39.00

Video

Apple 8 Bit Video Cards	$85.00
Apple 13" RGB Display	$250.00
Apple 14" Color Display	$350.00
*Apple 15" MultiScan	$339.00
Apple 16" RGB Display	$649.00
Apple 17" MultiScan Display	$799.00
Apple 20" MultiScan Display	$1299.00
Performa Display	$179.00

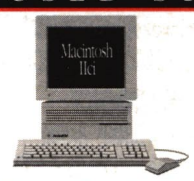
Printers/Peripherals

**Personal Laser LS	$279.00
LaserSelect 300	$299.00
Stylewriter	$129.00
Stylewriter II	$159.00
Portable Stylewriter	$199.00
ImageWriter II	$199.00
I/W LocalTalk Card	$59.00
Apple Color Printer	$299.00
Apple OneScanner ($25 OFF w/CPU Purchase)	$249.00
Apple Color OneScanner-	$399.00
Apple Ext. SuperDrive (1.44MB)	$149.00
Apple CD 300 Ext. Drive	$199.00
Apple HDI-20 Ext. Floppy Drive	$129.00
Apple 5.25" Drive (LC/IIe)	$79.00
Apple Design Kbd	$69.00
Apple Ext. II Kbd	$95.00
Din 8 Cable (CPU to ImageWriter II)	$5.00
Geoport Telecom Adapter	$79.00
PowerBook Cordura Carrying Case	$15.00
Apple PowerBook 4MB Ram (For PowerBook 140-180c)	$85.00
1MB/80ns Simm (30 Pin)	$15.00
Apple EtherNet & Network Cards - Call!!	

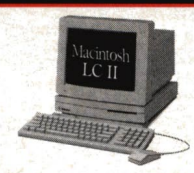
* Denotes Factory Refurbished

* USED SYSTEM SPECIALS *

Mac IIsi 5/80
Complete Color System
W/Apple Color Monitor & Kbd.
► $599.00 ◄



Mac II ci 4/80
Complete Color System
W/Apple Color Monitor & Kbd.
► $679.00 ◄



Mac LC II 4/80
Complete Color System
W/Apple Color Monitor & Kbd.
► $579.00 ◄

APPLE POWER CD
3-in-1 Portable CD-ROM Drive
w/Remote Control
for: Mac CD-ROM, Photo CD
& Audio Compact Discs
► $149.00 ◄

We Now Offer A Huge Inventory Of Parts For All Apple Products & Also Offer Extended Warranties

Visit Our Web Site At: www.getnet.com/macsale Or E-Mail Us At: macsale@getnet.com

Limited Quantities/Prices Subject To Change
Prices represent a Cash Discount - off Full Price.
Returns at discretion of Mgmt./15% Restocking fee.

1-800-729-7031

1150 W. Alameda Drive, Suite . #1 & 2
Tempe, AZ 85282
(602) 858-0900 / (602) 858-9537 (Parts)

WE WANT TO BUY YOUR NEW/USED MAC EQUIPMENT

Lack
DOCUMENT MANAGEMENT
skills?

here's
A QUICK
brush up

ENTERPRISE
DOCUMENT MANAGEMENT

Group document preparation • Document version tracking • Security through restricted access features • Search with up to 14 document attributes • Fully customizable document categories • Works with all document types.

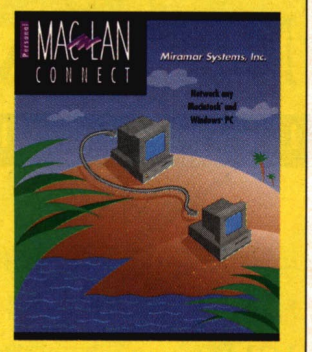
http://www.everyware.com/
EVERYWARE
7145 West Credit Ave.
Building 1 Mississauga, Ont. L5N 6J7
Tel: 905•819•1173

BEFORE PERSONAL MACLAN 5.5, THIS WAS THE ONLY FORM OF COMMUNICATION BETWEEN MAC AND PC USERS.

Finally, your MAC's and PC's can speak. Fluently. Because Personal MACLAN 5.5 is the only peer-to-peer software that delivers seamless file and printer sharing between hard drives, PostScript™ printers, CD-ROM drives and tape drives. And at $199, it's the ultimate form of communication for MAC's and PC's.

"Simply the best AppleTalk for Windows product you can buy." MAC User - November 1995

MacUser RATE 4½ November 1995



To order call:
Miramar Systems 800-862-2526
email: sales @ miramarsys.com
www.miramarsys.com
Call for competitive upgrades

Hang Ten with Mach Ten

Make Your Macintosh An Internet Server

Mach Ten... gives every Macintosh from Classics to PowerMacs:

1. Unlimited Web 'Home' Pages
2. Unlimited TCP Connections
3. Unlimited Mail Accounts
4. Unlimited Internet Addresses
5. Unlimited Domain Names
6. Domain Name Service (DNS)
7. POP Mail Service
8. Mac/UNIX File Sharing
9. Mac/UNIX Printer Sharing
10. Unlimited Possibilities

Mac™OS and UNIX on a single machine: *The Best Of Both Worlds.*

For more information, or to order call **1-800-6-MACH-10**
Internet: info@tenon.com http://www.tenon.com

TENON INTERSYSTEMS
1123 Chapala Street, Santa Barbara, CA 93101
Tel: 805-963-6983 • Fax: 805-962-8202

©1995 Tenon Intersystems. All trademarks are the property of their respective owners.

LET SOMEONE ELSE DO IT!

Need a data management problem solved but don't have the time, or staff, or expertise to get it done? Turn the job over to a registered 4th Dimension developer, experts at using 4th Dimension® and the suite of 4D products for database application development. Whether your problem can be solved by an off-the-shelf solution or needs a custom personalized solution, there is a 4D Developer who can get the job done for you.

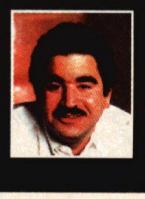
SOME 4D DEVELOPERS WHO COULD HAVE SOLUTIONS FOR YOU

Footprints, Inc.	Custom Developers, Mac/Windows	800-635-5280
James Integrated Technology	Sales & Operations Software	800-735-0635
Natural Intelligence	Custom Development	800-999-4649
Pacific Data Management, Inc.	Custom Development Experts	800-220-6430
Softek Design, Inc.	Accounting SW Solutions	970-728-5252

ACI
For more information on 4D registered developers, call ACI at (408) 252-4444
ACI US, Inc. 20883 Stevens Creek Blvd., Cupertino, CA 95014

VOLUME

"We're definitely reaching volume buyers in MacWEEK Marketplace. They're calling in droves and they're buying."



—Jay Goldstein, President, 800-WE-FIX-MACS

PUT YOUR AD HERE AND WRITE YOUR OWN MacWEEK SUCCESS STORY. START ADVERTISING NOW!
CALL 800-825-4237 TODAY!

Premier

COMPUTING
MEMORY
LIFETIME WARRANTY

SIMMS		DIMMS	
4MB 72/70	$85	4MB 168/70	$125
8MB 72/70	$175	8MB 168/70	$185
16MB 72/70	$355	16MB 168/70	$385
32MB 72/70	$695	32MB 168/70	$795
PB RAM	$CALL	64MB 168/70	$1625

1MB VRAM DIMM 72/75/85/95xx $69
L2 CACHE 256k/512k 72/75/85xx $155/255

WE BUY MEMORY
(800) 900-4599
Voice 305/725-9777 • Fax 305/725-9977
email source@netrunner.net
NO CREDIT CARD SURCHARGES
VISA MasterCard FedEx Federal Express American Express Cards NOVUS

Best Quality Lowest Price Memory
MAC MEMORY
LIFETIME GUARANTEE
DMS
Data Memory Systems Inc.
24 Keewaydin Drive unit 5
Salem, NH 03079
Tel. 603-898-7750
Fax 603 898 6585
www.datamem.com/datamem
DISCOVER NOVUS MasterCard VISA

30 PIN SIMMs 1MB/2MB/4MB/8MB/16MB
72 PIN SIMMs 4MB/8MB/16MB/32MB
168 PIN DIMMs 4MB/8MB/16MB/32MB/64MB
ALL POWER BOOKs 2MB-36MB
1MB DIMM VIDEO RAM 9500/8500/7500 Series
2MB VIDEO UPGRADE 9500/8500/7500 Series
VIDEO RAM 256K/512K
POWER MAC CACHE 256K/512K/1024K
DIMM CACHE 256K/512K/1024K
MEMORY FOR ALL PRINTERS
FPU & PROCESSORs
68040 Processor w/FPU 25MHz
68040 Processor w/FPU 33MHz
68882 FPU 25MHz /33MHz
University, Government and Corporate P.O.'s with Approved Credit
1-800-662-7466
Memory Upgrade Specialists Since 1987

MEMORY
NEW MEMORY • WE DO NOT USE OR BUY OLD CHIPS
LIFETIME WARRANTY • LOWEST PRICES • ALL NEW
30 pin SIMMs 1 MB / 4 MB $29 / $109
72 pin SIMMs 4 MB / 8 MB / 16 MB $99 / $199 / $409
168 pin DIMMs 8 MB / 16 MB / 32 MB $225 / $459 / call
800.544.6082 ext 5
SPECIAL SERVICES TO CORPORATE & EDUCATIONAL INSTITUTIONS
WE ONLY SELL NEW MEMORY
BOSS Micro electronics
fax: 415.929.1578
1592 Union Street #91
San Francisco, CA 94123

WANTED: Used Memory
TOP $$$ PAID
256K-64Mb ■ Any Quantity
Fed Ex and Cashier's Checks available
Trade-Ins Welcome
We Buy Macs
New & Used Memory Available
DIMMS Here Now!
(800)80-WE-BUY
MAC Solutions
1416 WILSHIRE BLVD. SANTA MONICA, CA 90403
(310) 394-0001 fax: (310) 394-7744

APPLE MONITORS
SPECIAL!!! APPLE 17" 1710AV COLOR $999.00
APPLEVISION AV 17" MON $999
APPLE 1705 17" MON $799
APPLE 1710 MS 17" MON $899
APPLEMLTISCN 20" MON $1899
APPLE MS 15" MON $369
APPLE MS 14" MON $329

APPLE HARD DRIVES
ON SALE!!! 1 gig External $319.00
APPLE 730MB 11ms $189
APPLE 1000MB 9.8ms $259
APPLE 2000MB 8ms $689
SGATE 4000MB 8.5ms $999
SGATE 2000MB 8.5ms $659
Add $75 for external version, includes terminator & 25-50pin scsi cable

GRAPHIC CARDS
SPECIAL PURCHASE!!! ATI 4MB PCI $439.00
ATI 2MB XCLAIM PCI $349
ATI 4MB XCLAIM PCI $439
RADIUS 30/1600 PCI $1189
RADIUS 30/1152 PCI $799
RADIUS/C 30/1600 PCI $1989

MEMORY PRODUCTS
DIMMS PCI MACS
8MB 2K 0164 $199
16Mb 2k 0264 $399
32MB 2K 0464 $799
64MB 2K 0864 $1599
L2 CACHE PCI MACS
256K-$139
512K-$219
DRAM PCI MACS
1MB-$79
2MB ATI Upgrade $189
MEMORY CARRIES LIFETIME WARRANTY
Kingston TECHNOLOGY CORPORATION
WE BUY MEMORY
POWERBOOK MEMORY CALL
72PIN SIMMS
4MB 2K 0132 $ 99
8MB 2K 0232 $199
16Mb 2k 0432 $379
32MB 2K 0832 $769
L2 CACHE PPC MACS
256K-$ 89
512K-$179
DRAM PPC & 040 MACS
256K-$20
512K-$30
800-914-MACS
InterMac Technologies • 8725 Sunset Road • Niles • IL 60714
Service/Tech (847) 696-3434 • Fax (847) 518-8856 Open 7 Days 9am-9pm CMT. Returns are subject to 15% restocking fee. No returns without RMA. Credit Cards are verified to prevent fraud. Call for volume discounts. Dealer & Reseller enquires welcome. Corp/Govt. Po's accepted subject to credit approval. Prices are cash discounted 5% for COD/Cashiers Check and can change without notice.
E-Mail InterMac@aol.com Internet http://www.imac.com

POWER MACINTOSH
9500/132 64/1GIG/CD Apple 17" & Ext. Keybs $5,899.00
9500/132 16/1gig/CDU $3579
9500/132 16/2gig/CDU $3879
9500/120 16/1gig/CDU $3199
8500/120 16/1gig/CD $3499
7500/100 16/1gig/CD $2599
7200/ 90 16/ 500/CD $1699
7200/ 75 8/ 500/CD $1269
APPLE POWERBOOKS
5300ce/117Mhz 32/1.1gig $4,799.00
5300ce/117 32/1.1 $4799
5300c /100 16/750 $3499
5300cs/100 8/500 $2299
5300/100 8/500 $1699
190cs/66 4/500 $1699
APPLE PRINTERS
SPECIAL PURCHASE!!! SELECT 360 $1,099.00
LASER/W SELCT. 360 $1099
LASER/W 4/600 $ 799
STYLE/W 2400 $ 379
STYLE/W 2200 $ 369
STYLE/W 1200 $ 249

MEMORY
Guaranteed Lowest Prices
Life Time Warranty
• 30 Pin SIMMS
• 1MB—16MB
• 72 Pin SIMMS
• 1MB—64MB
• 72 Pin EDO
• 4MB—64MB
• All Note Books
• All Printers
• VRAM, DIMM, CACHE
WE BUY MEMORY
We accept P.O.'s from government, schools & qualified firms.
Eritech International
1-800-808-6242
818-244-6242 818-502-5059

Diamond Computer Resources, Inc.
Standard & New 72 Pin SIMM's
PowerBook Memory
Quadra & Centris VRAM
We Buy New & Used SIMM's
16MB 72 PIN.... CALL
4X8 30 PIN.....$119
LifetimeWarranty MC/Visa No Surcharge
Corp.,Gov.&Univ.PO's Accepted
Fax 512-219-1132
800-541-7126
13377 Pond Springs R., Ste 105
Austin, TX 78729 • 512-219-1222

Memory Wanted
WE BUY NEW OR USED
SIMMS
256K, 512K, 1MB, 2MB, 4MB, 8MB, 16MB, 32MB.
30 Pin, 64 Pin or 72 Pin.
POWERBOOK 2MB - 28MB
We Buy In Quantity. Call Us or Send Fax.
INNOVATIVE MICRO PRODUCTS, INC.
7631 Leesburg Pike, Suite A
Falls Church, Virginia 22043
Tel.: 703-848-0711 Fax: 703-848-0712

World Micro 1-800-580-0177
Powermacs
7200/75 8/500CD 1225.
7200/90 16/500CD 1740.
7500/100 16/500CD 2325.
7500/100 16/1000CD 2530.
8500/120 16/1000CD 3599.
8500/120 16/2000CD 4100.
9500/120 16/1000CD 3380.
9500/132 16/1000CD 3675.
Powerbooks
5300/100 8/500 1645.
5300CS/100 8/500 2240.
5300CS/100 16/750 2695..
5300C/100 8/500 3080.
5300C/100 16/750 3625.
190 CS 8/500 1843.
190/66 8/500 1300..
New lower prices !!!
Call for Volume discounts
Laserwriter Select 360 w/ Toner 1120.00
Memory Upgrades
8MB DIMM 195.00
16MB DIMM 389.00
32MB DIMM 755.00
64MB DIMM 1630.00
Performas
5215CD 8/1000 1745.
6200CD 8/1000 1856.
6205CD 8/1000 1949.
6300/100 16/1.2CD 2599.
Printers
Laser 16/600 2030.
Laser 12/600 6100.
Laser 4/600 845.
Style. 2200 353.
Style 2400 365.
Custom configurations available
World Micro Systems
(305) 716-0177
(305) 716 0277 Fax
Prices reflect a 3% cash discount and are subject to change without notice

SONY MONITORS
17" SONY (R) AMEX $549
20" SONY (R) PO'S $785
INTERNAL DRIVES
IBM 540MB 2.5" PRBK $179
PCI POWER MACS
7200/75 8/500/CD $1299
7200/90 16/500/CD $1699
7500/100 16/1G/CD $2649
8500/120 16/1G/CD $3590
9500/120 16/1G/CD $3250
6100, 7100 & 8100 CALL
POWERBOOKS
DUO 270C 8/240 M(D) $1950
PBOOK 190CS 8/500 $1879
PBOOK 5300CS 8/500 $2198
PBOOK 540C 4/320(R) $2949
Computer Guys
603-659-2912 FAX 659-5722
PRICES SHOW CASH DISC. & CHANGE W/O NOTICE. 15% RESTOCKING

Classified

MediaGuide

BUY / SELL / TRADE

USED - *We guarantee the BEST prices!*

SE 4/20 (800K)...$179	Mac Plus 0/0.....$59
SE/30 4/80.....$399	Mac II 4/40 (800K)...$199
IIfx 0/0.....$299	IIvx 8/250/CD...$695
PB 170 8/80/M.....$899	Duo 230 4/80...$695
Quadra 800 8/500/CD.....$1249	
6100/60 8/230/CD.....$995	
Hard Drives.....$CALL	
Monitors.....$CALL	
Peronal Laserwriter LS (w/ toner).....$339	
RasterOps 24STV Video In/Out Card.....$495	
Radius PrecisionColor Pro 24X.....$495	
800K floppy.....$29	1.44mb floppy.....$89

We carry parts for aging Macs — CALL

NEW

105-key Extended Keyboard (5yr warr.).....$45

MS Office 4.2.1 CD...$149 MS Word 5.1a...$49

SIMMs and DIMMs - $25 per megabyte!!

(303) 936-5617

e-mail: MGSales@MediaGuide.com • Fax (303) 937-9790

TECHMATIX 800-777-4932

8309 LINDEN OAKS COURT.....LORTON.....VA.....22079

FAX 703-912-6649.....MONDAY - FRIDAY.....9 a.m. - 6 p.m. EST

POWERMAC

7200, 75MHZ/8/500/CD	$1319
7200, 90MHZ/8/500/CD	$1459
7500, 16/500/CD	$2359
7500, 16/1GB/CD	$2545
8500, 16/1GB/CD	$3759
8500, 16/2GB/CD	$4229
9500/132MHZ/16/1GB/CD	$4055
9500/132MHZ/16/2GB/CD	$4149

PERFORMA'S

5215CD	$1765
6116CD	$1459
6200CD	$1765
6220CD/TV	$1765
6205CD	$1859
6300CD	$2325

POWERBOOK

DUO 2300c, 8/750	$3245
DUO 2300c, 20/1.1GB	$4169
DUO 280c, 12/320/modem	$3289
PB 190, 8/500	$1315
PB 190cs, 8/500	$1879
5300, 8/500, MONO	$1695
5300cs, 8/500, DSTN	$2309
5300cs, 16/750, DSTN	$2775
5300c, 8/500, TFT	$3139
5300c, 16/750, TFT	$3695
5300cs, 32/1GB, TFT	$5545

WE CARRY MANY ITEMS NOT LISTED HERE.
PLEASE CALL FOR ALL YOUR MAC/IBM NEEDS

All products factory new except where stated. Pricing subject to change without notice. Please call for most current pricing. No returns will be accepted without an RMA number. All RMA's subject to a restocking fee.

PRINTERS

APPLE LASERWRITER 4/600PS	$845
APPLE LASERWRITER SELECT 360	$1035
APPLE LASERWRITER 16/600PS	$2125
APPLE COLOR LASERWRITER 12/600PS	$6115
HP DESKJET 1600C/M	$1865
HP LASERJET 5MP	$985
HP LASERJET 4M+	$1879
HP LASERJET 4MV, 11X17	$2685
HP LASERJET 5SIMX	$3699
LEXMARK OPTRA R+, 1200dpi, 16ppm	$1339
LEXMARK OPTRA LXI+, 1200dpi, 16ppm	$2649
LEXMARK OPTRA C COLOR LASER	$5755
LEXMARK LOCALTALK Card	$259

EPSON

STYLUS PRO XL Color Inkjet 720dpi, 13"X19", 2-Year Warranty	$1759

VISA, MASTERCARD & DISCOVER ACCEPTED. All prices reflect a 3% Cash Discount and are subject to change without notice.

Apple AST COMPAQ HEWLETT PACKARD LEXMARK ADVANCING THE ART OF PRINTING radius

MACMAIL

WITH THE LOWEST PRICE EVER

POWERMAC 7200 75•8 500 CD	$1198
POWERMAC 7200 90•16 500 CD	$1625
POWERMAC 7500 100•16 1G CD	$2410
POWERMAC 8500 120 16 1G CD	$3580
POWERMAC 9500 120 16 1G CD	$3295
PRINTER APPLE COLOR SW 2400	$350
PRINTER APPLE LW 4/600 PS W TNR	$765
PRINTER APPLE COLOR LW 12/600 W KIT	$6110
DISPLAY APPLE 15" MULTISCAN	$359
DISPLAY APPLE 1710 MULTISCAN	$865
RASTEROPS SUPERSCAN 20"	$1380
POWERBOOK 5300 CS/100 8/500	$2140
POWERBOOK 5300 CS/100 16/750	$3420
POWERBOOK 190/66 8/500	$1315
**PERFORMA 6200 CD•8/1G	$1325
**PERFORMA 6300 CD•16/1.2G	$2595

**Prices include Monitor, Keyb., Modem &Soft.

•SE HABLA ESPAÑOL •Int'l Orders Welcome
•Leasing Plans •FEDEX•UPS•Etc..•Prices may change
•Prices represent cash discounts

MACMAIL VISA COD
Miami, Florida 1-800-622-6844
International call (305) 639-9646
800•MAC•6844

DATA

MICRO COMPUTER INC.

800•345•1234
TEL (310) 398•3300
FAX (310) 391•2488

DEALERS & INTERNATIONAL SALES WELCOME!

• Govt. Univers.'s & Corp. P.O.'s welcome •

POWERMAC

6100/66 8/500/CD	1345.
7100/80 8/700/CD	1450.
7200/75 8/500/CD	1295.
7200/90 16/500/CD	1726.
7500/100 16/500/CD	2450.
7500/100 16/1Gig/CD	2645.
8100/80 8/700	2150.
8100/100 16/700/CD	2585.
8100/110 16/2Gig/CD	2995.
8500/120 16/1Gig/CD	3595.
8500/120 32/4Gig/CD	4695.
9500/120 16/1Gig/CD	3450.
9500/120 32/4Gig/CD	4550.
9500/132 16/2Gig/CD	3750.
9500/132 32/4Gig/CD	4775.

POWERBOOKS

5300CE 32/1Gig	5595.
5300C 16/750	3650.
5300C 8/500	3095.
5300CS 16/750	3050.
5300CS 8/500	2337.
5300 Mono 8/500	1695.
190CS 8/500	1945.
190 8/500	1695.
540C 4/320	2795.
520C 4/160	1495.
520C 4/240	1595.
520 4/160	1095.
150 4/240	895.
Full Dock	395.
Platinum pro	495.

AGFA

Arcus	$1995

Apple

Sele.300/495	
S/360	$1045.
12/600/5895.	
16/600/1695.	
Per/320/599.	
Per/300/399.	

RADIUS

15" Gray Scale	385.
15" Pivot/Gray Scale	474.
20" TPD/20GS	695.
21" TPD/21GS	777.
Precision Color/17	745.
Intellicolor Disp./ 20E	1599.
Pressview 17SR	1869.
Pressview 21T	1995.
SuperMatch 17XL	695.
SuperMatch 20 Plus	1395.
SuperMatch 21 Color	1395.
SuperMatch 21TXL	1945.
Video vision Studio	2675.

PERFORMAS

476 4/320	595.
550 5/160CD	844.
575 5/250CD	995.
578 8/320CD	1175.
5215 16/1Gig CD	1795.
630 4/250	655.
635 4/250CD	775.
637 8/350CD/15"	1297.
638 TV/8/350CD15"	1352.
640Dos 12/500CD	1595.
6200 16/1Gig/CD	1795.
6300 16/1.2Gig CD	2545.
6220TV 16/1GigCD	2199.
Centris 650 8/500	995.

MacAttack

$$$

(800) 299-6227

Sales Hours: M-F, 8-5 CST

409.690.5353 (Fax) 409.690.5345 (Intl. Sales) Contact Us Via Internet! MASales@aol.com

BLOW-OUT SALE!

Power Macs

6100 AV Card	$379
7200/75 8/500/CD	$1217
7500/100 16/500/CD	$2174
7500/100 16/1G/CD	$2348
8500/120 16/1G/CD	$3479
8500/120 16/2G/CD	$3914
9500/120 16/1G/CD	$3740
9500/13216/1G/CD w/Graphic Card	$3740
9500/132 16/2G/CD	$3827

GREAT Prices!

WorkGroup Servers

6150/66 16/700 CD/4.1 AppleShare	$2426
8150/110 16/1000 CD/Internet	$3782
9150/120 16/1000 2HD/CD/DAT	$6343
9150/120 16/1000 2HD/CD/DAT/Int	$6642

Memory

	4 MB	8 MB	16 MB	32 MB
72 Simms	$99	$194	$389	$711
Dimms	$121	$207	$437	$862
PB 500	$112	$224	$451	
PB 5300	$164		$454	

Networking

ASANTÉ	
10BaseT FriendlyNet	$CALL
Ethernet NBUS MACII	$82
10 Base T LC Card	$86
10 Base T Nubus	$99

Modems

SupraFax 14.4	$170
SupraFax 28.8	$193
Global Village	
TelePort Platinum	$178
TelePort Mercury	$270
PowerPort Gold	$229
PowerPort Mercury for Duo	$303
PowerPort Mercury (PB Int)	$306
PowerPort Platinum 28.8 S/R-Fax	$296

PowerBooks

Duo Dock II Plus w/Ethernet	$784
190/66 8/500	$1478
190 4/500	$1434
190cs/66 8/500	$1739
5300cs/100 16/750	$2564
5300c/100 8/500	$2906
5300c/100 16/750	$3419
5300ce/117 32/1.1GB	$5129

Monitors

Apple Multi Scan 15" Display	$394
Apple Multiple Scan 20 Display	$1739
RasterOps 21" and 24XLI	**$1299**
Sony Multi Scan 15"	$428
Sony Multi Scan 20"	$1846
E Machines T 16	$1117

Printers

Apple Color LW 12/600PS	$5655
Apple LW 16/600PS w/Toner	$1965
Apple LW 4/600PS w/Toner	$782
Apple StyleWriter 1200	$226

Keyboards

Apple Design Keyboard	$68
Apple Extended Keyboard II	$133

Scanners

Apple Color One Scanner	$695
AGFA StudioScan II	$335
AGFA Arcus II	$1703
HP ScanJet 4c & Mac Interface	$869

Other Stuff

Apple Desktop Bus. Mouse II	$63
Kensington Thinking Mouse	$86
Kensington Turbo Mouse 5.0	$102
Quick Take 150 For Mac, PMac, Win	$594
QuickTake 150 Connection Kit Mac/Win	$78
Newton Message Pad 120/2MB	$520
Apple CD 600e	$276

All Listed Prices Are COD & Subject To Change. Fax Orders Welcome!
COD, Wire Transfer, Mastercard, and VISA accepted. 15% Restocking Fee On Returned Merchandise.

LARGEST WEST COAST INDEPENDENT Apple RESELLER, PARTS & SYSTEMS

ASK ABOUT OUR BUSINESS LEASING

iCN

INNOVATIVE COMPUTER & NETWORKING INC.

UGRADE YOUR PB500 TO POWERMAC 603 PROCESSOR $789 + $40 LABOR

9500/132 16/1GB/CD/ATI Apple 20" Ref. Monitor+KB **$4769**

9500/120 16/1GB/CD/ATI Apple 1705 Monitor+KB **$4249**

8500/120 32Mhz 16/1GB/CD - Demo **$3549**

8500/120 120Mhz 16/1GB/CD - Demo **$3190**

POWERMAC

9500/132 16/1G/CD	$3489
8500/120 16/1G/CD	$3495
7500/100 16/1G/CD	$2389
7200/75 8/500/CD	$1199
7200/90 16/500/CD	$1639
7100,6100	CALL

DEMO

Q950 8/500/CD	$1195
Q800-840AV 8/230/CD	$1095-1197
Q650 8/230	$1165
IIci 4/80	$395
IIfx 4/80	$425
Perf 575 5/250/CD/14"Mon	$929
Perf 400 4/80	$299

SPECIAL

8100/100 8/700/CD	$2190
P.Book 520 4/160-R	$875
P.Book 540c 4/320-R	$2190
Perf 550 4/160/14"Mon	$629

ORIGINAL APPLE PART

AV card	$430
CACHE card 61,71,8100	$70
Apple Power Macintosh Upgrade Card	$495

PERIPHERAL

SyQuest EZ135	$229
NEC 6X-SPEED CD-ROM DRIVE EXTER.	$497
BEST DATA 604 PROCESSOR CARD	$197
UMAX Vista S6 w/FULL PHOTO	$639
UMAX Vista S8 w/FULL PHOTO	$749
AGFA STUDIOSCAN IISI	$847
AGFA ARCUS II w/FULL PHOTO	$1897
PaperPort Vx BY VISIONEER	$357

MONITOR

14" Performa Color Plus	$289
APPLE 14" Multi	$335
APPLE 15" Multi	$359
APPLE 1705 17" Multi	$789
APPLE 1710Vision Multi	$849
APPLE 20" Multi-R	$1395
NEC 15XV Plus	$497
NEC 17XV Plus	$819
SONY 15SF2	$489
SONY 17SF2	$879

PRINTER

APPLE LW 810	$1849
APPLE LW 4/600	$759
APPLE LW 16/600	CALL
APPLE SW 1200	$189
APPLE SW 2400	$299

GCC PRINTER

XL608 600dpi/8ppm/11x17	$2169
XL808 800dpi/16ppm/11x17	$2590
XL616 600dpi/16ppm/11x17	$2389
XL1208 1200dpi/8ppm/11x17	$3559

ATTO Technology
NUBUS/PCI SCSI-2 FAST/WIDE ACCELERATORS

ExpressPCI SINGLE CHANNEL	$269
ExpressPCI DUAL CHANNEL	$699
SiliconExpress IV NUBUS	$779
ExpressStripe RAID-0 PCI	$329

CUSTOM CONFIGURATIONS

POWERMAC UPGRADE

With Oringial Apple Logic Board & Parts

Q800*, Q840AV & 8100s to 8500/120/132	$1650-1979
Q900, Q950 to 9150/120 WGS	$1690
C610, Q610, Q660 to 6100/60	$790

POWERBOOK

GLOBAL VILLAGE Platinum ProPC	$489
5300c 8/500	$3099
190cs 4/500	$1495
520 4/240	$1097
Duo280c	CALL
150 8/240	$895

PERFORMA

630 8/250/CD/14"Mon/Mod/KB	$1299
5215 8/1G/CD/Mod/15"Mon/KB	$1689
6116 8/700/CD/Mod/14"Mon/KB	$1599
6200 8/1G/CD/Mod/15"Mon/KB	$1699
6220 16/1G/CD/Mod/TV-VKB	$1799
6300 16/1G/CD/Mod/15"Mon/KB	$2399

•Prices Subject to Change Without Prior Notice•
•All Prices Reflect 3% Cash Discount•

FOR TECHNICAL INFO. AND THE MOST RECENT PRICING VISIT OUR WEB SITE AT

Internet: http://www.icni.com
eMail: icn@icni.com

PowerBook 5300 8/500 $1275

PowerBook 5300 8/500 $2099

PowerBook 5300 16/750 $3349

PowerBook 5300 32/1.1G $4889

310-445-6600
FAX: 310-445-6611
2045-B S. BARRINGTON AVE., LA, CA 90025 • Mon-Fri 8am-5pm PST

Infinity Micro

Apple UMAX HEWLETT PACKARD GCC TECHNOLOGIES Seagate DAYSTAR DIGITAL

One stop shopping for all your software & hardware needs!

•Lease Available! 800 • 589 • 1234 •Fax us for Best Quotes!

"Custom Configuration Specialists"

POWERMACS

6100/66 8/300/CDDemo	1145.
7100/80 8/700/CD	1295.
7100/80 AV 16/700/CD	1995.
8100/100 8/700	CALL
8100/100 16/700/CD	CALL
8100/110 16/2GIG/CD	2895.
7200/75 8/500/CD	2995.
7200/90 16/500/CD	1695.
7500/100 16/1GIG/CD	2495.
8500/120 16/1GIG/CD	3485.
8500/120 16/2GIG/CD	3895.
9500/120 16/1GIG/CD	3295.
9500/132 16/2GIG/CD	3595.
9500/132 16/1GIGCDV	3495.

PRINTERS

Stylewriter 1200	195.
Stylewriter 2400	319.
Personal Laserwriter 300	325.
Pamasonic 300dpi Laser	299.
Laserwriter 4/600	769.
Laserwriter 16/600	2075.
Laserwriter Pro-810	2495.
Color Laser 12/600PS	5895.

POWERBOOKS

150 4/120	875.
520 4/240	1065.
520C 4/240	1395.
540C 4/320	2395.
190 8/500	1575.
190CS 8/500	1845.
5300 8/500	1485.
5300CS 16/750	2695.
5300C 16/750	3345.
5300C 8/500	3045.
5300CE 32/1GIG	4745.
G.V. Platinum Pro	495.
MhZ fax Modem	299.

PERFORMA

550 5/160CD w/ 14"	775.
575 5/160CD w/14"	995.
578 8/250CD	1099.
630 8/250 CD,14"	895.
635 5/250/CD w/ 15"	1045.
637 5/700/CD w/ 15"	1095.
638 8/350/CD w/ 15"	1345.
6115 8/350CD,15"	1245.
6200 8/1Gig/CD	1495.
6300 16/1.2Gig/CD	2295.

Specials!

PowerBook 520 4/240 $1065.

PowerBook 150 4/240 $875.

Aldus Pagemaker Ver. 4.2 $99.

PANASONIC $345. 300dpi Post Script L.2

AdobePhotoshop 3.01 P.M.

6100/66 8/350CD Demo $1145.

radius MONITORS

PrecisionColor 17	775.
PrecisionColor 21	1475.
PrecisionView 17	875.
PressView 17 SR	1875.
Intellicolor 20e	1495.
SuperMatch21TXL	1795.
PressView 21T/Calib.	1875.
PressView 21SR	3095.

VIDEO CARDS

PrecisionColor 8/1600	459
Thunder IV GX Cards	CALL
Thunder/30-1152	795.
Thunder/30-1600	1145.
Thunder Color/30-1152	1545.
Thunder Color/30-1600	1795.
Thunder 24GT Card	545.
VideoVision Studio 2.0	2395.
ATTO Silicon Express 4	795.
TrueVision Targa 2000	3495.

Dealers & International Orders Welcome!

2289 Westwood Bl. LA, CA 90064
tel 310•470•9426 fax 310•470•4956

Que Computers

Buy & Sell

RAM Specials

1/4mb 30 pin or 64 pin $19.95/$89.95
8mb 72 pin 60ns $229
4/6mb for PB $99/135

Mac & Peripherals

Mac Plus 1/4 mb w/keybrd mouse	$75/149
Classic II 4/80 $349	SE/30 4/40 $349
MacIIvx 4/200CD $499	**Mac IIci 4/80 $349**
Mac IIfx 4/80 w/24 bit video card	$399
Centris/Quadra 610 8/230 w/E	$699/799
Quadra 660AV 8/230CD	$999
Apple Color StyleWriter Pro (new)	$299
Apple LaserWriter 300 (Apple ref.)	$299
LaserWriter IInt/f/g	$399/499/599
Int/Ext.800k/FDHD, manual/auto	$29/99
030-20MHz w/FPU Accelerator for Plus	$49
SE/Classic 25-40MHz accelerator	$49/$99

Hard Drives

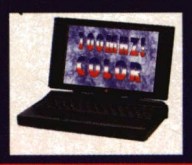
1 or 2GB Seagate, 3 yr warranty $249/599
240mb ext $119, Ext. HD/CD case $39/29
540mb 2.5" internal for PB, new $189

Que Computers 612-623-9144
Mac/PC, New/Used, Buy, Sell, Upgrade
2418 E. Hennepin Ave., Minneapolis, MN 55413
fax 612-623-9155 Major credit cards accepted. No extra charge

Classifieds

TRY OUR NEW INTERNET SITE! http://www.Compu-America.com

5300CE 100MHZ! 32/1.2G $4695
5300C 100MHZ! 16/750 $3199
5300CS 100MHZ! 16/750 $2599
5300CS 100MHZ! 8/500 $2099
5300 100MHZ! 8/500 $1349



- 100MHz 603e CPU
- 2 PCMCIA BUS
- NEW DESIGN
- Ion Lithium Battery
- 5 Hour Battery Life

We are OPEN Saturday!

SALES CALLS (310) 446-1771
FAX BIDS (310) 475-7744

COMPU AMERICA "The Computer Specialist"

Come see our huge showroom!

10435 Santa Monica Blvd, LA CA 90025

9500 132MHZ! 16/1GIG/CD/2MB ATI VID $3495
9500 120MHZ! 16/1GIG/CD/2MB ATI $3199

- 132MHz CPU
- 604 RISC
- PCI BUS
- Tower Case
- Built in EtherNet
- 6 PCI Slots
- 4X CD-ROM

1-800-533-9005

8500/120MHZ

- 120MHz PPC CPU
- Audio/Visual Capable
- Built in Video Capture
- Supports 24bit Color
- 3 PCI Slots
- 256K Cache

16/1GIG/4XCD $3499
16/2GIG/4XCD $3899

7500/100MHZ

- 100MHz PowerPC 601
- Upgradebale CPU
- Video In
- 3 PCI Slots
- Desktop Case
- System 7.5

16/500/4XCD $2299
16/1GIG/4XCD $2399

7200/90MHZ

- 90MHz PowerPC 601
- Up to 136MB RAM
- Built in EtherNet
- 3 PCI Slots
- Desktop Case

8/500/4XCD $1399
16/500/4XCD $1599

7200/75MHZ

- 75MHz PowerPC 601
- Up to 136MB RAM
- Built in EtherNet
- 3 PCI Slots
- Desktop Case

8/500/4XCD $1199
8/1GIG/4XCD $1399

DUO 2300C

- 100MHz PowerPC 601
- Up to 48MB RAM
- Light Weight
- Active Color
- Dockable

20/1.2G/28.8 $4095
8/750 $3095

PowerBooks

150 8/240 $949
520 4/240 $1099
520C 4/160 $1299*
520C 4/240 $1399*
540C 4/320 2499*
540C 12/500/FAX 3099*

Performa 6300

- 100MHz PowerPC 603
- 15" Color Display
- Keyboard & Mouse
- $900 Software Bundle
- 28.8 FAX/MDM

16/1.2GIG/4XCD $2279!

Performa 6220

- 75MHz PPC 603E
- 14.4 FAX/MDM
- Built in TV Card
- $900 Software Bundle
- Mouse & Keyboard!!!

16/1.2G/4XCD $1729

Performa 5215

- 75MHz PowerPC 601
- 15" Color Display
- Keyboard & Mouse
- $900 Software Bundle
- 14.4 FAX/MDM

8/1GIG/4XCD $1699

Performa 6200

- 75MHz PowerPC 601
- 15" Color Display
- Keyboard & Mouse
- $900 Software Bundle
- 14.4 FAX/MDM

8/1GIG/4XCD $1629!

Performa 6116

- 66MHz PowerPC 601
- 14" Color Display
- Keyboard & Mouse
- $900 Software Bundle
- 14.4 FAX/MDM

16/1GIG/2XCD $1389!

Performa 638CDV

- 66MHz 68040
- 15" Color Display
- TV CARD!
- $900 Software Bundle
- 14.4 FAX/MDM

8/350/CD/TV $1299!

POWERMAC

8100/110 16/2GIG/CD	$2749
8100/100AV 16/1GIG/CD	$2699
7100/80AV 16/700/CD	$1799
7100/80 8/700/CD	$1299
7100/80 8/500	$1099
6100/66 8/500/CD	$1099

Performa

6220 16/1GIG/CD/TV	$1749
638CDV 8/350/CD	$1099*
635CD 5/250/CD	$849*
6116CD 8/700/CD	$1199*
6115CD 8/350/CD	$1099*
631CD 8/500/CD	$999*
630cd 8/250/CD	$899*
550CD 5/160/CD	$799*

Monitors

Sony 15SF2 / 17SF2	489/879
Sony 17SE1 / 20SE1	1099/1899
NEC 15XV/17XV	499/779
Apple MultiScan 14"	359
Apple 15" / 1710	349/929
Apple 1705 17"	729
Apple 17" 1710AV w/spkr.	999
Apple 20"	1899

Apple Printers

StyleWriter II	$199
StyleWriter 2200	$349
StyleWriter 2400c	$299
LW 4/600/PS	$799
LW Select 320	$599
LW Select 360	$1099
LW 16/600PS	$2099
LW 12/600/PS Clr	$5995

RADIUS

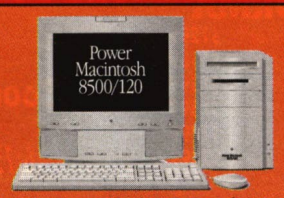
Precision Color 21" $1499*
IntelliColor 20e $1499*
SuperMac 17" $699

Accessories!

GV Teleport Platinum 28.8 $199
GV Teleport Gold II 14.4 $129
Apple 6100 DOS Card $499
Apple Color One Scanner $699
ATI Graphis Ultra w/4MB $499

All prices are cash discounted. Prices subject to change without notice. Not responsible for typos. Government, Universities, and Fortune 1000 company P.O.'s are welcome.

Power Macintosh

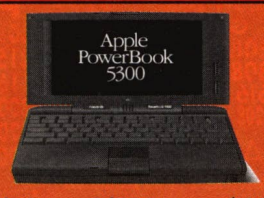


7200/75	8/500CD	$1189
7200/75	8/1GBCD	1399
7200/90	8/500CD	1359
7200/90	8/1GBCD	1549
7500/100	16/500CD	2289
7500/100	16/1GBCD	2479
7500/100	32/2GBCD	3155
8500/120	16/1GBCD	CALL
8500/120	16/2GBCD	CALL
8500/120	48/4GBCD	5039
9500/120	16/1GBCD	CALL
9500/132	16/1GB/CD	3599
9500/132	16/2GBCD	CALL
6100/66	8/500CD	1079
6100/66	8/500DOS	1619
8100/100AV	16/1GB	2536

Performa

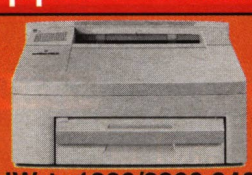
6116CD	8/700CD	1369
5215CD	8/1GB/CD	1749
6200CD	8/1GB/CD	1599
6205CD	8/1GB/28.8	1849
6218CD	16/1GBCD	2199
6220CD	16/1GB/TV	1759
6290CD	8/1.2GB14"	2039
6230CD	16/1GBMPEG	2279
6300CD	16/1.2GB15"	2299
QUICKTAKE 150		629
APPLE MPEG CARD		249
VIDEO/TV SYSTEM		219
PRESENTATION SYS.		269

PowerBook



190/66	8/500	$1319
190CS/66	8/500	1879
5300	16/500	1419
5300CS	8/500	1999
5300CS	16/750	2449
5300C	8/500	2789
5300C	16/750	3319
5300CE	32/1.1	5099
2300C/100	8/750	3145
2300C/100	20/1.1MDM	4049

Apple Printers



StylWrtr 1200/2200		246/379
StylWrtr 2400		319
LsrWrtr	4/600PS	799
LsrWrtr	360 W/Tonr	1089
LsrWrtr	16/600 W/Tnr	2098
LsrWrtr	12/600Ps	5899

WorkGroup Srvrs

6150/66	16/700CD	$2069
6150/66	16/700CDAS	2659
8150/110	1GB/CD/AS	4479
8150/110	1GB/INRNT	4079
9150/120	16/2GB/CD	5489
9150/120	16/1GB/AS	7499

FOURB TECHNOLOGIES

ORDER NOW AND SAVE
1-800-946-6221
International: 310.571.0506
Fax: 310.571.0510

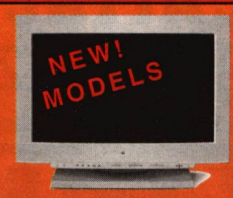
iomega ZIP 100 $187
GLOBAL VILLAGE TELEPORT PLATINUM $188
AppleCD 600e $289
Performa 6300CD $2299
hp 5 MP $969
Power Macintosh 7200/90 8/500/CD $1359
Power Macintosh 6100/66 8/500/CD $1079
Power Macintosh 7100/80 8/700/CD $1269
Power Macintosh 8100/110 16/2GB/CD $2799

Apple Monitors

MltplScan 14"/15"	319/359
MltplScan 1705/1710	799/888
MltplScan 1710AV	988
MltplScan 20	1839

Gov't,Schools,Fortune 500 P.O.'s Welcome.FEDEX Next Day Avail.Visa,MC,AMAX accepted.Prices are Cash Discounted for COD Cash/Cashier Check.

SONY



15SX		419
15SF2		479
17SF2		839
17SE2	NEW!	1089
20SF2	1600X1280	1749
GDM-2000CT	NEW!	3099

NEC

XV 15/XV15+	459/489
XV 17/XV17+	739/789
XE 17/XP 17	989/1039
XE 21/XP 21	1689/1939

FOURB External Hard Disk

500MB/1GB EXT	169/329
2GB EXT. HDD	639
4GB EXT. HDD	989
9GB AV EXT. HDD	2199

WACOM

ArtPad II 4X5	119
ArtZ II 6X8	289
ArtZ II 12X12	415
ArtZ II 12X18	685

GLOBAL VILLAGE

Teleport Platinum	188
PwrPort Gold PC	168
PwrPort Platinum PC	319
PwrPort Platinum Pro	459

EPSON

ES-1000C	629
ES-1200C PRO-MAC	1129
Stylus Color II	448
Stylus Color	489
Stylus Color Pro	579

AGFA

Arcus II	1889
StudioScan	579
StudioScan IIsi	909

Nikon

CoolScan LS-10E	1299
Super CIScan 1000	1999
ScanTouch AX1200	1199

HEWLETT PACKARD

DeskWriter 600	239
DeskWriter 660C	389
DeskJet 855C Mac	499
DeskJet 1600CM	CALL
LaserJet 5MP	969
LaserJet 4M+	1839
LaserJet 4MV	2689
LaserJet 5SI MX	3729
ScanJet 4C Mac	888

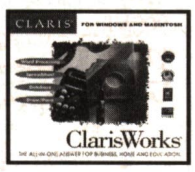
GCC

Elite XL608		2199
Elite XL616		2479
Elite XL808		2789
Elite XL1280	24MB	3889
Elite XL1280	Super Size	5519

Classified

Parts Trades Upgrades

*Call 318-424-9791



$99 Bundle
- System 7.5 CD
- ClarisWorks 3.0 CD
- internal 1/2 height 160MB HD
- Global Village Bronze modem

Quadra 660AV 4/0
$649
REFURBISHED
monitor & keyboard not included

PowerBook 520 Series

We take trades on PowerBooks!
call (318) 424-9791

PowerBook 520c
- 4/240, 25MHz LC040
- DUAL SCAN COLOR
- FACTORY REFURBISHED

$1399

PowerBook 520
- 4/240, 25MHz LC040
- GRAYSCALE DISPLAY
- FACTORY REFURBISHED

$1099

BARGAIN BASEMENT

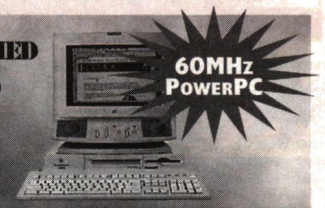
MACINTOSH SYSTEM 7.5 .....25/35.
New Duo Type 1 Batteries.....15.
IIvx Logic Board.....249.
Newton Fax/Modem 2400.....49.
PowerBook 140-180c keyboard.....49.
PowerBook 140-180 A/C adapter .....49.
Curtis Trackball Mouse new .....39.
StyleWriter ink cartridges: 3 for 29
ImageWriter LQ ribbon .....6.
IIsi Power Supply .....CALL.
PowerBook Canvas Tote Case .....19.
Quadra 660AV NuBus Adapter .....49.
Personal NT Logic Bd. ..... 49.
Mac Plus Keyboard ..... 29.

Macintosh Logic Board Upgrades

Personal NT to NTR printer ugprade	exchange $199
LaserWriter IINT/NTX to IIf	exchange $499 NT/399 NTX
Mac II to IIfx (with RAM swap)	exchange $449
Centris 610 to Quadra 660AV	exchange $299
Quadra 660AV TO PowerMac 6100/60	exchange $699
Quadra 800 to Quadra 840AV	exchange $499
Quadra 800/840av to PowerMac 8100/80	exchange $999
Quadra 650 to PowerMac 7100/66	exchange $899
LC550 to LC575	exchange $499
IIvx or IIci to Centris 650	exchange $399
IIsi to Performa 630 cpu swap	exchange $399

Quadra 950 8/500
$1499
Brand New!
1-Year Apple Warranty

FACTORY REFURBISHED
Performa 6116
8/700/CD
$999
monitor & keyboard sold separately



Quadra 840AV 0/0
$1099
refurbished

$1199
new

Performa 578
The Family Macintosh
- 33Mhz MC68LC040 processor
- 8MB RAM, 320MB hard drive
- built-in 14" trinitron
- extended keyboard
- double-speed CD-ROM
- built-in speakers & microphone
- fax-modem: 2400data, 9600 fax

PRE-INSTALLED SOFTWARE
- Macintosh System 7.5
- ClarisWorks
- Quicken 4
- Best of HomeWorks Templates
- ClickArt Performa Collection
- Macintosh PC Exchange
- At Ease
- Grolier Multimedia Encyclopedia

...and lots more!

UMAX
UC840
24-Bit Scanners
$549
NEW
includes:
- Adobe Photoshop LE®
- Wordlinx™ OCR Software

1.44 SuperDrives
New $149
Refurbished $129
*Specify if manual insert

Macintosh CPUs

LCIII 4/0, no floppy or mouse NEW	$249.
*LC550 4/160/CD	$749.
*LC580 8/500/CD	$999.
*Performa 631 8/500/CD	$829.
*Performa 637 8/350/CD	$779.
Centris 650 4/0	$749.
Quadra 605 4/160 NEW	$679
Quadra 660AV 4/0	$649.
Quadra 840AV 0/0	$1099.
Quadra 800 8/0	$1099.
Quadra 950 8/500 NEW	$1499.
PowerMac 6100/66 8/350/CD NEW	$1199.
PowerMac 7100/80 8/500/CD NEW	$1399.
WGS 9150 16/1G	$2799.

Monitors

Apple 13" Trinitron	$299.
*Apple 14" AudioVision	$349.
*Apple 15" MultiScan	$349.
Apple 16" Trinitron	$699.
Apple Portrait Display REFURBISHED	$329.
*Hewlett-Packard 17" with card	$749.
*Hewlett-Packard 20" with card	$999.
Radius PrecisionColor Pivot	$549.
Radius TPD 19" mono	$399.
Radius TPD 21" mono	$549
Radius PrecisionColor/20	$1199.
Radius Color Display/21	$1299.
RasterOps Sweet 16	$599.
RasterOps GDM-1950 20"	$849.

$50 Instant Rebate on listed monitors with complete system purchase!

Video Cards/Acc.

640 x 480

RasterOps 208 NEW	$119.

832x624

RasterOps 24Mx NEW	$199.
E-Machines DoubleColor LC	$149.

1024 x 768

E-Machines DoubleColor SX NEW	$149.
RasterOps ClearVue/GS30 NEW	$299.
RasterOps PaintBoard Turbo NEW	$299.

1152 x 870

Apple 8•24	$229.
Apple 8•24GC NEW	$269.
Apple 4•8	$199.

PowerBook & Duo Display Adapters

E-Machines PowerLink Presentor-Duo	$349.
SuperMac SuperView-PowerBook	$299.

Power Macintosh Cards

8100 series AV Card	$499.
7100 series AV Card	$499.
6100 series AV Card with adapter	$599.
PowerMac 2MB VRAM Card standard	$299.
PCI PowerMac Video Card standard	$299.

Printers

*Apple StyleWriter 1200	$219.
*Apple Color StyleWriter 2400	$269.
*Apple Personal LaserWriter LS	$299.
Apple Personal LaserWriter 300	$319.
Apple Personal LaserWriter NT	$599.
Apple Personal LaserWriter NTR	$699.
Apple LaserWriter IINT	$699.
Apple LaserWriter IINTX	$899.
Apple LaserWriter Pro 810 NEW	$2699.
Apple Color Printer NEW	$699.
Hewlett-Packard DeskWriter C	$219.
Hewlett-Packard DeskWriter 550c	$249.

Laser toner cartridges sold separately

PowerBooks

PowerBook 520 SALE top of page!

PowerBook 170 4/80	$999.
PowerBook 180 4/80	$1349.
PowerBook 160 4/80	$1149.
PowerBook 150 4/120	$849.
PowerBook 145 4/80	$999.
PowerBook 140 4/40	$849.
DuoDock Type 1	$399.
Duo 230 4/120	$849.
Duo 250 4/240	$1099.
Duo 280 4/240	$1399.

We Buy, Sell & Trade PowerBooks
Call Purchasing Department
(318) 424-9791

SHREVE Systems
Celebrating 15 years in business

To Place Your Order Call:
1•800•227•3971
1200 Marshall St. • Shreveport LA 71101

VISA MasterCard AMERICAN EXPRESS DISCOVER

FAX (318) 424.9771
Customer Service (318) 424.9791
Purchasing & Information (318) 424.9791
BBS (318) 424.9713

Prices reflect a 2% cash discount and are subject to change without notice. Products are refurbished unless indicated as "new". Asterisk means *factory* refurbished.

Classified

Classified

Power Systems and Supplies.

POWER MACS

Power Mac 9500[132] 16/2GB/CD	3,499
Power Mac 9500[120] 16/1GB/CD	3,149
Power Mac 8500[120] 16/1GB/CD	3,589
Power Mac 7500[100] 16/1GB/CD	2,465
Power Mac 7200 [90] 8/500/CD	1,485
Power Mac 7200 [75] 8/500/CD	1,159
Power Mac 7100[80] 8/700/CD	1,399
Performa 5215[75] 8/1GB/CD/FAX	1,699
Performa 6200[75] 8/1GB/CD/FAX	1,349
Power Book 5300[100] 8/500	1,549
Power Book 5300[100] CS 8/500	2,199
Power Book 5300[100] C 16/750	3,699

SCANNERS

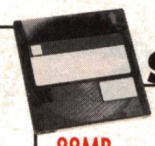
Microtek II HR	549
Microtek II	369
Umax Vista S 6	549

PERIPHERALS

Laserwriter Color	5,399
Laserwriter 4/600	749
Stylewriter 2400	339
Stylewriter 2200 Color	369
Apple Monitor 14" - NEW	329
Apple Monitor 15"	399
Apple Monitor 17" - NEW	729
Apple Monitor 20"	1,849
Apple Keyboard	75
Geoport	109

HP PRINTERS

Deskwriter 600	249
Deskwriter 66C	389
Desk Jet 850C	399
Laser Jet 5MP	1,049
Laser Jet 4M Plus	1,849



SyQuest external

CARTRIDGE		DRIVE
88MB	45	199
200MB	65	369
270MB	57	369
EZ 135MB	19	199

MACNET

1-800-404-9976

All products are fully warranted. Dealers inquires welcome.

*CPU ONLY

MacResQ Mnl. Inject Floppy Drives: $65!

510-689-9488

We Help You beat The System 510-689-9487 Fax

POWERMAC 6100/60 8/250/CD (R)	$899!!
POWERMAC DOS CARDS (N)	$349!!
PowerBook 520 4/240 (R)	$999
PowerBook Duo 280 4/240 (N)	$1399
PowerBook Duo 230 4/80 (R)	$749
PowerBook 520c 4/240 (R)	$1449
PB 5300cs 8/500 (N)	$2099
Performa 630 8/250/CD (R)	$799
Performa 578 8/500/CD w/Ext. Kbd (N)	$1099
APPLE HARD DRIVE LIQUIDATION!!	
80MB / 160MB	$45/$65
250MB / 360MB	$80/$90
Apple Manual Inject Floppy (p/n 661-0121)	$65*
Apple Auto Inject Floppy (p/n 661-0474)	$89*
APPLE POWER SUPPLY BLOWOUT!!*	
LC, II, III, Perf. 4xx, Quadra 605	$19
Quadra 900/950 / Q 800 to PPC 8100	$199/$109
C610 to PPC 6100 / IIcx to PPC 7100	$59
PPC 8500/9500 / Duo Dock	$129/$79

FOR A FULL INVENTORY LIST:

WebSite: http://www.macresq.com

Qty. Disc. Available • N=New• R=Refurbished • Prices Subject To Change *Less Than 5 Pieces Requires Exchange• H-P Authorized•Apple Service Provider

---

YOU CAN'T BEAT THESE PRICES!

RADIUS REFURBISHED PRODUCT

All monitors are fully warranted

SuperMatch 17	$549
SuperMatch 17T Trinitron	$689
SuperMatch 20 Dual Mode Trinitron	$999
Radius IntelliColor 20e Trinitron	$1349
Radius SuperMatch 21TXL Trinitron	$1449

NEW APPLE DISPLAYS

Apple 15" Multiple Scan Display	$358
AppleVision 1705 17" Display	$698
AppleVision 1710 17" Display	$898

PRINTER SPECIALS

Apple Personal Laser 300 Printer- ref	$329
Apple Color StyleWriter 2400	$369
Apple LaserWriter 4/600	$799

CUSTOMIZABLE MACINTOSH SYSTEMS

Used Centris 650 8/230/CD W/Ethernet	$699
Ref Performa 637 8/350/CD	$788
Ref Performa 6115CD 8/350/CD	$888
New Performa 575 5/250/CD	$999
Performa 5215 8/Gig/CD w/15" Monitor	$1848
Performa 6200CD 16/Gig/CD w/Monitor	$1849
Performa 6300CD 16/Gig/CD w/Monitor	$2388
PowerMac 7200/75 8 Ram/CD	$114[illegible]
PowerMac 7200/90 8 Ram/CD	$138[illegible]
PowerMac 7500/100 16 Ram/CD	$224[illegible]
PowerMac 8500/120 16 Ram/CD	$339[illegible]
PowerMac 9500/120 16 Ram/CD	$319[illegible]
PowerMac 9500/132 16 Ram/CD	$318[illegible]

All Powerbooks in stock from 150 to 5300CE!

POWER MAX Knowledge is Power The Right Computer Company

800-844-3599

Fax: (503) 624-1635 Local: (503) 624-1827

Call for our free catalog!

And find us on the World Wide Web at:

HTTP://WWW.Illuminatus.Com/PowerMax

Our people have been designing Mac systems since 1987. We don't just sell you a box and hope you don't call back.

We'll give you some advice, customize & bench-test your system, and support you before, during and after the sale. Call today and experience the PowerMax difference!

PowerMacs	
7200/75 8/500/cd	Call
7200/90 16/500/cd	Call
7500/100 16/500/cd	2459
7500/100 16/1gb/cd	Call
8500/120 16/1gb/cd	Call
8500/120 16/2gb/cd	Call
9500/120 16/1gb/cd	Call
9500/132 0/0/0	2699

Performas	
6116CD/60 8/700	1495
5215CD/75 8/1gb	1759
6200CD/75 8/1gb	1759
6205CD 8/1gb	1849
6220CD 16/1gb	1759
6230CD 16/1gb/mpeg	2399
6300/100 CD	2275

Powerbooks	
190/66 8/500	1569
190CS/66 8/500	1799
5300/100 8/500	1649
5300CS/100 8/500	2199
5300C/100 8/500	2999
5300C/100 16/750	Call
PB 5300ce/117 32/1g	5299
Duo 2300C 8/750	3145
Duo 2300C 20/1.1gb	4039

Call for all Workgroup Servers

We are the Lease Experts with lowest rates and same day approval O.A.C.

We carry over 800 venders including, Agfa, Nikon, Umax, TI, Radius, NEC, Sony, Epson, FWB, PLI, Pinnacle, Visioneer, Targa, Microtek ....

Apple Monitors	
Multiplescan 14"	345
Apple 15" Color	Call
Multiplescan 1705	729
Applevision 1710	935
Multiplescan 20"	1879

Apple Printers	
Stylewriter 1200	Call
Stlyewriter 2400	Call
Port. Stylewriter 2200	399
Laser Select 320	699
Laserwtr 4/600 PS	Call
Laser Select 360	Call
Col. Laserwtr 12/600	5999

Hewlett Packard	
Deshwriter 600	259
Deskwriter 340SF	375
Deskwriter 660C	399
Laserjet 5MP	999
Laserjet 4M Plus	1849
Deskjet 1600CM	1869
Deskjet 850C	Call
Deskjet 855C	Call
Copyjet-M (3 in 1)	2875
Laser 4MV 11x17	2679
Laser 5SiMX	3699
Scanjet 4C	919
Scanjet 4S	299
Duplex option 4M+	495

We'll beat any price quote or lease payment Subject to verification

Mac Storm

In California Since 1988

(800) 594-4007

Local & Int'l Phone (310)829-9780

Local & Int'l Fax Line (310)315-1009

International & Dealer sales welcome

Prices reflect 3% cash discount and may change

WE ACCEPT VISA, M/C, AMEX, DISCOVER

MacWorks

"Low Prices, Great Service. . . That's The Deal!"

Call for Pricing on Full Line of Apple Products

Performa 6112* - 8/250/CD	$899
Performa 6115* - 8/350/CD	$929
Performa 6118* - 8/500/CD	$949
Performa 6116* - 8/700/CD	$999
Performa 575 - 5/250/CD/14" trinitron	$1099
Performa 630* - 8/250/CD	$799
PowerBook Duo 230* - 4/120	$749
PowerBook Duo 280 - 4/240	$1499
PowerBook 5300cs - 8/500	$2199
PowerBook 5300c - 8/500	$2999

800-711-8679

e-mail: sales@macworks.com

web: http://www.macworks.com/

Voice 913-642-6336 • Fax 913-642-6466

UPS Ground Shipping only $5 with all CC orders • International Sales Welcome Prices Subject to Change • All Prices Represent Cash Discount FedEX/DHL/UPS • *Denotes Refurbished(90-day Warranty)

You deserve it. Now you can afford it.

POWER MAC SYSTEMS

7200/90 16/500/CD	$1799
7500/100 16/1Gig/CD	$2799
8500/120 16/1Gig/CD	$3799
8500/120 16/2Gig/CD	$4199
9500/132 16/2Gig/CD	$3999
9500/132 16/1Gig/CD/V	$3899

COLOR MONITORS

17" PDL Pivot 1700 .26	$999
17" Multiscan Trinitron .25	$689
19"/20" Multiscan Color .31	$999
20" Philips Trinitron .30 (R)	$1399
21" Philips FastRefresh .28 (R)	$1499

RAPIData VISA MasterCard

800 316 8816

New unless indicated (R) refurb. Prices for cash sale.

Fax 916-391-8330 • Corp./govt. POs accepted

Sales Office: 14 Moses Ct., Sacramento, CA 95823

Heavy Duty Software Sales

CATS COMPUTER ADD-ONS

800-989-2264

Insignia Solutions Soft/Win PowerMac CD 2.0	$249
Adobe Pagemaker 5.0 PowerMac	$425
Adobe Pagemaker 6.0 PowerMac	$479
Adobe Photoshop 3.0 PowerMac	$479
Adobe Premier 4.0 PowerMac	$399
Adobe Persuasion 3.0	$299
Adobe After Effect 3.0	$649
Adobe Illustrator 6.0	$379
Macromind Director 4.0 PowerMac	$699
Macromind Freehand 5.5 PowerMac	$299
Quark Express 3.3 PowerMac	$625
WP 3.5 PowerMac	$189
Lotus 1-2-3 for PowerMac	$279
Canvas 3.5 PowerMac	$279
Microsoft Mac	CALL

HP MAC PRINTERS

DJ 850C	$479	HP 4MP	$699
DJ 1600CM	$1869	HP 5MP	$975
4M+	$1799	HP 4C Scanner	$890
1200 CPS $1299			

718-939-7976 • 718-886-2025 • Fax 718-939-7193

MAC FAST

1-800-829-4857

POWERMAC

7200/75 8/500	$1,369
7200/90 16/500/CD	$1,819
7500/100 16/1GB/CD	$2,739
8500/120 16/1GB/CD	$3,679
9500/120 16/1GB/CD	$3,830
9500/132 16/1GB/CD	$4,749
9500/132 16/2GB/CD	$4,263

PERFORMAS

5215 8/1GB/CD4X	$1,799
6200 8/1GB/CD4X	$1,799
630 8/500/CD	$1,280

KEYBOARD

DESING	$ 74
EXTENDED	$144

MONITORS

MULTISCAN 14" / 15" APPLE	$318-369
MULTISCAN 17" NEW APPLE	$699
MULTISCAN 17" AV NEW APPLE	$989

POWERBOOK

190CS/66 4/500	$1,729
5300/100 8/500	$1,649
5300CS/100 8/500	$2,279
5300C/100 16/750	$3,550

PRINTERS

STYLEWRITER 1200	$199
STYLEWRITER COLOR 2400	$319
LASERWRITER 4/600	$799

NON DEFECTIVE RETURNS OR SHIPPED ORDER MY BE SUBJECT TO 15% RESTOCKING FEE. ALL PURCHASES OVER $2500 THE SHIPPING IS FREE • NO MONITORS INCLUDED DISCOUNT IN CASH/CASHIERS CHECK

INTER SALES: (305) 593-9221

FAX: (305) 593-8921

SHIPPING FREE • FEDEX ECON.

KELLEY COMPUTER

Surplus Liquidation Specialists

Used Systems	
Mac Plus 1/0 w/Keyboard & Mouse	89.00
Mac Classic 2/40 w/Keyboard & Mouse	269.00
Mac II 1/40 w/24-bit color card	199.00
MONITOR Deals	
17" Trinitron Monitors, .26 dp (R) (832 x 624 @ 75hz)	399.00
17" Hi-res. Trinitron Monitors, .26 dp (R) (1024 x 768 @ 75hz)	449.00
20" Trinitron Monitors	599.00
SuperMac 8•24 PDQ Vid. Card (N)	199.00
Weekly Specials	
1.44 FDHDs (NEW) (No Exchange required)	129.00
External 320MB Hard Drives (N) (w/SCSI Cables)	159.00
Internal 4x CD-ROM Drives (N)	149.00
Apple CD-ROM Internal Mounting Kits (N)	14.75
External 4x CD-ROM Drives (N) (w/CD Software and SCSI Cable)	179.00
"Stealth" ADB Black Mouse (N)	25.00
System 7.5-CD or Diskette w/manuals (N)	22.00
Apple Mac OS Watches (N)	20.00

Call for a catalog!!

• Prices Reflect 3% Cash Discount

• Prices Subject to Change • Quantities Limited.

4323 Anthony Ct.,#1, Rocklin, CA 95677 916-652-1880 • 916-632-1881 FAX

Please Call! 800-673-6227

OWC

Hard Drives

		Int.	Ext.
Quantum 540mb	9.8ms	$149	$199
Quantum 840mb	12ms	$195	$249
Quantum 1080mb	9.8ms	$249	$299

=3 1/2 Mice in Nov. 95 MacUser Magazine

Conner 2.1gb	**9ms**	**$479**	**$529**
Quantum 2.2gb	8.5ms	$599	$649
Quantum 2.1gb	8ms	$799	$849
Quantum 4.3gb	8.6ms	$939	$989

CALL FOR DRIVES NOT LISTED!

SPECIAL! Powerbook Drives:

Apple 200mb $139 $189

30-Day Money Back Guarantee on All Hds! Sys7.1 Installed & 30mb of free software. External version features platinum case with dual SCSI ports. Push-button SCSI ID, 40watt power and formatting utility.

No Surcharge! NuBUS VISA MasterCard Discover

CODs/Gov. & School POs accepted

Performa Systems

Performa 6300 System	$2399
Performa 6200 or 5215	$1399

Call For PowerBooks

MEMORY HARD DRIVES MACS & MORE!

Serving the Mac Universe since 1988

New Memory w/Lifetime Warranty

72 pin SIMMS			DIMMS	
4mb	70ns	$95	8mb	$195
8mb	70ns	$169	16mb	$379
16mb	70ns	$349	32mb	$779
32mb	70ns	$699	64mb	$1599

Level 2 Cache

for NuBus PowerMacs		for PCI PowerMacs	
256k	$89	256k	$179
512k	$199	512k	$289

VRAM for PCI PowerMacs

1 Mb	$69	2 Mb ATI UG	$199
EA Research PCI 16/1600 128bit 4mb			$549

PowerMacs

7200/75MHz	8/500/CD	$1199
7200/90MHz	16/500/CD	$1519
7500/100MHz	16/500/CD	$2399
7500/100MHz	16/1000/CD	$2549
8500/120MHz	16/1000/CD	$3699
9500/120MHz	16/1000/CD/ATI	$3289
9500/132MHz	16/1000/CD/ATI	$3829

Custom Configurations Available

OWC Rocket

84mhz Accelerator for both PowerMac 6100s and 7100/66 $49.95

Other World Computing

224 West [illegible] Woodstock [illegible]

International: (81[illegible]

Fax: (81[illegible]

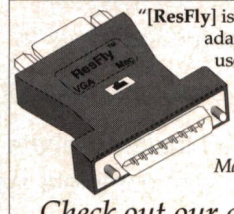
Prices and specifications subject to change w/o notice. 15% restocking fee on returned merchandise unless otherwise noted.

800-275-4576

ILLINOIS & INTERNATIONAL:

(815) 338-8658 / FAX (815) 338-4332

VGA to the Macs!



"[ResFly] is a $25 universal adapter that allows users to switch on the fly among all supported Mac and VGA resolutions."

MacWeek, 4/10/95

Check out our complete line of video adapters and switch kits.

Free tech support!

Free shipping!

Money-back guarantee!

MacAdapt MC Visa AmEx

(510) 525-0789 fax (510) 525-5740

http://www.macadapt.com jzjames@macadapt.com

Optical Cartridges

KYOCERA

World's Largest 3.5" MO Producer

Lifetime Warranty

$19.99 230MB

230MB Magneto Optical Disks

128MB MO Disks . . . $15.99

Memory Merchants

4 Shratton Avenue, San Carlos, CA 94070

800-799-DISK *Since 1989*

http://www.mmerchants.com

JOIN
TEAM IMMACULATE
WE PLAY FAIR
Call us
"for your best option"
Buy Sell Trade Service Part
Fast repair Memory CPU's
Complete upgades Web Pages
"We Have Everything"
Inquire about our consultant ,repair depot. and developer rates.
Visa-MasterCard-Amex-Discover

1-800-8080-MAC
WWW.EARTHLINK.NET/~IMMACULATE
PLAYS UPDATED DAILY
310-577-1791
Fax 310-577-1793
immaculate@earthlink.net

BUY • SELL • TRADE
CASH FOR YOUR MAC

New Sales		Used Sales	
9500/120 16/1G/CD	$3395	Centris 650 4/80	$575
PB 520 4/240	$1075	Quadra 800 8/230	$999
Apple 15" Multiscan	$399	Port Stylewriter ref	$149
Apple 1705 17"	$725	Duo 230 4/80 ref	$745
Photoshop 3.0.5	$395	Apple 15" ref	$289
Laser Select 360	$1095	Mac IICi 4/230	$395

New & Used Mac Sales and Service
Corporate Customers: Ask About Our Rental Program
MAC-RENTALS
REMARKETING
1-800-756-6227
7924 Ivanhoe • La Jolla, CA 92037 • Fax: 619-454-1360

BUYERS
Marketplace readers are buyers. 77% of them bought hardware from a Marketplace ad in the last twelve months.
ADVERTISE HERE, WHERE MAC VOLUME BUYERS BUY DIRECT!
CALL 800-825-4237
Source: 1994 MacWEEK Marketplace Subscriber Study

Quantum
HARD DRIVES

340MB	Fujitsu	$119
730MB	NEC	$175
850MB	Trailblazer	$199
1080MB	NEC	$229
2100MB	Capella	$675
4280MB	Atlas	$949

*Please add $59 for External Hard Drive
External includes Power&SCSI Cable, Ext Terminator, Formatting Software, Installation Manual.

ENCLOSURES

Portable	$58
Zero Footprint	$58
4-Bay Case	$129
7-Bay Case	$229
Pocket Case	$29

*ALL HARD DRIVES & ENCLOSURES ARE BRAND NEW WITH 2 TO 5 YEAR MANUFACTURER'S WARRANTY. ALL HARD DRIVES COME WITH FORMATTING SOFTWARE. 30-DAY MONEY BACK GUARANTEE. UNLIMITED TOLL FREE TECHNICAL SUPPORT.
PRICES ARE SUBJECT TO CHANGE

MEMORY

1MB	1X8 80ns	$28
2MB	2X8 80ns	$55
4MB	4X8 70ns	$99
4MB	1X32 70ns	$73
8MB	2X32 70ns	$154
16MB	4X32 60ns	$299
1MB	VRAM	$69
4MB	PB5300	$139
8MB	PB5300	$255
16MB	PB5300	$499
24MB	PB5300	$761

DIMM MEMORY

8MB	$177
16MB	$359
32MB	$739
64MB	$1549
128MB	$4400

OTHER MAC STUFF

Extended Keyboard (2-Year Warranty)	$39
ADB Mouse (5-Year Warranty)	$19
Bulk Disks 50-Pack	$24
Phonet Connector (Lifetime Warranty)	$7
HDI-30 Adaptor (Lifetime Warranty)	$19
Ethernet Tranceiver (Lifetime Warranty)	$29
RAMDoubler (Connectix)	$54
QuickCam (Connectix)	$99

INTERNATIONAL ORDERS (360) 380-3999, GOVERNMENT & CORPORATE PURCHASE ORDERS ACCEPTED, NO CHARGE FOR VISA & MASTERCARD.
PRICES SUBJECT TO CHANGE
T.D. CURRAN
800-645-2533
Fax (360) 380-3900
T.D. Curran Inc.
3635 Haxton Way
Bellingham WA 98226

ACTION
MacWEEK Marketplace Shoppers have wide ranging product needs. Last year, on average, they bought 19 different products from Marketplace ads.
ADVERTISE HERE, WHERE MAC VOLUME BUYERS BUY DIRECT!
CALL 800-825-4237
Source: 1994 MacWEEK Marketplace Subscriber Study

perisys
CURRENT PRICING

SYQUEST & OPTICAL DRIVES

Syquest 88m External	$269
Syquest 200m External	$429
Syquest 270m External	$399
Syquest Ez135 External	$221
Syquest 88m Internal	$152
Syquest 200m Internal	$309
Syquest 270m Internal	$309
Syquest Ez135 220v	$236
Iomega Zip Drives	$189
Syquest 44m Media	$39
Syquest 88m Media	$44
Syquest 105m Media	$49
Syquest 200m Media	$62
Syquest 270m Media	$52
Fujitsu 230MO House External	$469
Fujitsu Dynamo MO	$485
Olympus 230MO House External	$448
Olympus Deltis 230MO	$485
Optical Media 230M	$18

Externals include 1 cartridge

SCSI HARD DRIVES

Quantum Lps 540s 12ms	$149
Quantum Fb540s 12ms	$159
Quantum Tb 850s 14ms	$185
Conner 1060s 9ms	$239
Conner 1080s 11ms	$239
Quantum Fb1080s 12ms	$249
Quantum Fb1280s 12ms	$329
Seagate St 51080n 10.5ms	$259
Quantum Vp 2.2g 8.6ms	$625
Hewlett Packard 2.14g 9.5ms	$509
Seagate St 32550n 8ms	$725
Conner 2105s 9ms	$559
Conner 2107s 8ms	$599
Quantum Gp 4.3g 8.6ms	$935
Quantum Atlas 4.0g 8ms	$955
Conner 4207s 8ms	$928
Seagate St 15150n 8ms	$1160
Seagate St 41080n	$2050

Add $70 to any price hard drive for an External. All external drives come with a formatter, cables, and an active terminator.

ATTO RAID KITS

Pci Raid Kit Single Channel	$599
Pci Raid Kit Multi Channel	$1099

All Raid Kits include the controller, cables, and Atto Express Raid Software. The controllers can be purchased separately. Call for pricing.

CD ROM RECORDERS

Phillipps CDD 2000 Internal	$1050
Phillipps CDD 2000 External	$1125
Yamaha 102 Internal	$880
Yamaha 102 External	$999

add $175 for Toast Pro 2.5 software.

322 31st St. Hermosa Beach, CA 90254
CALL TOLL FREE
800/581-6299
For our full line of products visit us on the Web at www.perisys.com email perisys@perisys.com
VISA MasterCard

RECORD CDs
NEVER UNDERSOLD GUARANTEED

SONY 2X BUNDLE $999
Includes:
Toast Pro Premastering Software
• Write Hybrid or Mixed-Mode CDs
• Create Audio CD's
• Archive
FWB CD Toolkit
• Capture tracks from audio CDs
• Accelerate your CD Drive performance

YAMAHA 4X MULTIMEDIA BUNDLE $1699
Includes:
Toast Pro Premastering Software
• Write Hybrid or Mixed-Mode CDs
• Create Audio CD's
• Archive
FWB CD Toolkit
• Capture tracks from audio CDs
• Accelerate your CD Drive performance

CD-R BLANKS AS LOW AS $5.99
Verbatim, Sony or Mitsui
74 Minute • 4X & 6X Cert.
CD-R Blank LABELING KITS ONLY $79

OPTICAL BLOWOUT
128MB...$12.99
230MB...$17.99
650MB Optical ...$39.99
1.3GB Optical ...$49.99

Maxoptix 2.6 GB MO $1999

iomega JAZ 1
1GB Removable HD
• 3.5" Removable Hard Disk Technologye
• 6.7 MB per sec. Ideal for Video
1 Cartridge $599

SYQUEST CARTRIDGES
44MB...$33 • 88MB...$37
200MB...$70
105MB...$35 • 270MB...$56

CD-ROM CHANGERS
4, 7, 50, & 100 CD-ROM CHANGERS AVAILABLE
CALL FOR CURRENT PRICING

MEDIASTORE
See us at http://www.mediastore.com
800-555-5551
NEVER UNDERSOLD!
ph. 714-997-5551 • fx. 714-997-5553
VISA MasterCard AMERICAN EXPRESS

REFURBISHED/USED MACS & PERIPHERALS

Mac IIsi 5/40	$259
Mac IIsi 9/80	$339
Mac LC III 4/80	$329
Mac LC III 8/160	$449
Centris 610 8/230	$699
Quadra 800 8/230	$1099
LaserWriter IINT 2MB	$399
LaserWriter IIg 4MB	$649

1-800-281-3661
Call 615-860-0109 anytime to request a fax of current products.
VISA & MasterCard Accepted
DataTech Remarketing, Inc.
471 Myatt Dr., Madison, TN 37115
615-860-4422 • Fax 615-860-0390

UNBELIEVABLE LOW PRICES
HARD DRIVES(1 YR WRNTY)

CAPACITY	INTERNAL	EXTERNAL
40MB	$58	$98
80MB	$85	$135
270MB	$125	$165
330MB	$159	$199
540MB	$185	$225
1080MB	$345	$385

FLOPPY DRIVES (90 DAYS WRNTY)
800K--$80 1.44MB--$150
MAC KEYBOARDS-$70 MAC MOUSE $65
MEMORY

30 PIN (QUADRA 900,950,700, IIVX,II,IICI,IISI,SE30,LCII)	72 PIN (ALL POWER MACS 6100,7100,8100, QUADRAS,CENTRIS,PERFORMAS,LC'S.
1MB 1X8-80NS $27	4MB 1X32 $91
2MB 2X8-80NS $74	8MB 2X32 $193
4MB 4X8-80NS $113	OTHERS CALL

PLEASE CALL FOR MEMORY NOT LISTED
KAHON, INC. 1-800-317-9989
22699 OLD CANAL RD PH: 714-637-5060
YORBA LINDA CA 92687 FAX:714-637-5597
CORP., SCHOOL & GOVT. P.O. WELCOME
VISA OVER 6 YEARS IN BUSINESS

$40 VIDEO CARD Mac Sync Adapter
• Makes older SuperMac, Raster-ops, E-Machines, Radius and most other monitors compatible with Mac bulit in video support.
• Sync on green circuitry makes older monitors compatible with AV's, LC's PowerMacs, Powerbooks, and 605's.
• Save thousands of dollars off of the purchase of video cards and monitors.
• Supports all Apple video resolutions.
PowerMac Accelerators $75.00
Griffin Technology MC/VISA
PH: 615/399-0990
FX: 615/399-7060
1451 Elm Hill Pike Nashville, Tn 37210

$60.00 Power Mac Clip on Accelerator
• Accelerates 040 and PowerMacs models to a new level of performance.
• Accelerates your Mac from 20%-43%

• 6100/60	84 Mhz	43%
• 6100/66	84 Mhz	27%
• 7100/66	90 Mhz	36%
• 7100/80	90 Mhz	13%
• 8100/100	126 Mhz	16%

• We also have Centris 610, 650, Quadra 610, 650, 800, 840 AV, 660AV.
Mac Sync Video Adapter $40.00
Griffin Technology MC/VISA
PH: 615/399-0990
FX: 615/399-7060
1451 Elm Hill Pike Nashville, Tn 37210

Classified

Classified

Quality Pre-Owned Macs Now On Sale!

MAC2CI 80Mb 4Mb 68030/25	$ 395	PM 6100/60/250HD/8MB W/ CD	1,195
MAC2CI 80Mb 5Mb 68030/25	425	PM 6100/60/250HD/8MB AV W/CD	1,295
MACLC2 80Mb 4Mb 512K 68030/16	395	PM 6100/66/500HD/8MB W/CD	Call!
MACLC3 80Mb 4Mb 512K 030/25	495	PM 7100/80/700HD/8MB W/CD	Call!
MACLC575 160Mb 8Mb 1V CD	895	PM 7100/66/500HD/8MB AV W/CD	1,795
C610 80Mb 4Mb 1.4M 68040/20	495	PM 8100/80/500HD/16MB AV W/CD	Call!
C610 230 230Mb 8Mb 1.4M 68040/20	650	PM 7100/80/500HD/8MB NO CD	Call!
C650 80Mb 8Mb 1.4M 68040/25	725	PM 7100/80/700HD/16MB AV W/CD	Call!
C650 230 230Mb 8Mb 1.4M 68040/25	775	Q650 040/33 500Mb 8Mb 1.4Mb CD	1,395
C660230CD 230Mb 8Mb 1.2M 1V 040/25	995	Q800 040/33 500Mb 8Mb 1.4Mb CD 1V	1,495
PB-D 68040/33 240Mb 12Mb Color	1,495	Q840AV 68040/40 230Mb 1.2M 1V CD	1,595
PB-D 68040/66 320Mb 4Mb Color	2,495		

1-800-431-7716

GE Capital
Computer Remarketing Services
Our Business Is Helping Yours®

- *30-day warranty included*
- *All sales subject to availability*

MAXED SYSTEMS® COMPUTER SALES

Lowest Prices!

1996 Apple Prices

PPC8500 & PPC9500

Maxed Configured Assembly

Surf the Perfect Apple Waves

ANCIENT GREEK MAC TRIVIA
First olympic competition: To exit the Labyrinth of Manataurus Dickanopoulos must answer this Mac Question: What European country accepted the banished apple CEO in 1996 A.D.?

(619) 623-1575

HOT PRICES, COOL ATTITUDES

La Jolla •USA• Rio De Janeiro •Brasil• Paris •France•

VISA • AMEX • DISCOVER

ANSWER: CAUL BRAVO! DICKANOPOULUS WILL LIVE!

PPC 8500 120 32/4/CD	$4395.
PPC 8500 120 16/1/CD VRAM/Cache	$3395.
PPC 8500 120 0/0/0	$2095.
PPC 8500 132 16/1/CD VRAM/Cache	$3950.
PPC 8500 132 0/0/0	$2595.

Upgrade Your Old Macs!

Q840AV to 8500	$1595.
Q800 to 8500	$1795.

Apple Survival Special!

PowerBook 5300C 16/750	$2945.
PPC 6100/60 8/230/CD/AV	$875.
Apple 17" Multiscan	$675.
Apple 21" Multiscan	$1550.
PowerBook 5300CS 8/500	$2195.

* All pricing reflects assembled units * All prices are cash prices
* Prices subject to change without notice * All sales subject to approval and availability

---

ISOMEDIA

2441 152nd Ave NE, Redmond, WA 98052
(206) 869-5411 • Fax (206) 869-9437

800-468-3939

CD-ROM SERVICES

Serving you Since 1991

- **Premastering and Duplication**
  Macintosh HFS, ISO 9660, Hybrid, Mixed Mode, Audio, RockRidge, MSCD or CDPLUS
- **CD-ROM Replication and Fulfillment**
  One-Offs, Short-Runs and full Replication
- **Data Conversion**
- **Quick Time and MPeg Video**
- **Scanning and Imaging Services**

Blank CDR-74 minute Media **$7.95 in volume**

World Wide Web
http://www.isomedia.com

Cutters: •Sony •Yamaha •CDE100 •Pioneer
Software: •Toast •OMI •Sony •Gear •Incat

Apple II & Macintosh

COMPUTERS • PARTS • EXCHANGE REPAIRS

Specialists in used and reconditioned systems, monitors, printers & parts. Call for a free catalog.

1-800-274-5343

Int'l: 617-275-4600 FAX: 617-275-4848

Pre-Owned Electronics INCORPORATED

205 BURLINGTON ROAD, BEDFORD, MASSACHUSETTS 01730

Connect to: IBM midrange & mainframe
UNIX • DEC • HP • Tandem
DG • Honeywell & other hosts

Terminal emulation solutions
VICOM MultiTerm

- 36 business emulations including 3270; 5250; Wyse 60/50; SCO ANSI; TVI 950/925; VT420/320/220; VT340/241 ReGIS; HP2392A; DG410/211; Tandem 6530; Adds VP 50;VIP7800 + 18 more
- IND$File file transfer for IBM
- Customized & remapped keyboards, menus, buttons
- Ethernet, Tokenring; Novell SAA, WallData SNA•ps, Andrew gateways supported.
- Native on Power Macintosh.
- Works with VICOM SoftRouters
- FTP Client Pro & CTB Telnet Tool also available.
- Demo copies for evaluation available on www site.

>> The most powerful terminal emulators available <<

Vicom Technology
email: sales@vicomtech.com
Tel:1-800-818 4266
Web: www.vicomtech.com

Client / Server Solutions

VICOM Pro SDK

- Build GUIs to mainframe/mini host application & data
- Build GUIs to SQL, Sybase, Oracle, database systems
- Transition from legacy systems
- Professional development tools with compiler, project manager, debugger, datascope, GUI builder
- Powerful programming language

>> One-stop solution <<

Vicom Technology
email: sales@vicomtech.com

Internet access for your entire LAN

VICOM Internet Gateway

- Multiple Macs & PCs on a LAN can simultaneously share one internet account & IP address
- Save costs by sharing one account
- Automatic connection with transparent & proxy addressing
- Modem & ISDN support
- Central control over which sites can be accessed

>> Demo copy available <<

Vicom Technology
www.vicomtech.com/vig.main

Credit Card

Authorization & Electronic Deposit Software

- Automatically authorizes and deposits all credit card sales -- individually or in batches
- Integrate into your sales system using AppleEvents, AppleScript & import/export

INTERNET COMMERCE READY!

MacAuthorize®

POS Credit Developers since 1981

800/483-5526 • 408/274-111(
info@tellan.com
http://www.tellan.com
Tellan Software, Inc

Data Recovery
800-743-0594

- **Most Operating Systems**
- **Hard Drives, Floppy Drives, Syquest, Zip, Jaz, Optical and Bernoulli Media.**
- **One-Day Service Available**
- **Competitive Rates**

"We've been performing data recovery for years, have thousands of references, and our recovery services are recommended by virtually every manufacturer. My entire staff and I are committed to giving you the best service available. Feel free to contact me direct at extension 134 if you ever have any questions or comments."
Kelly Leopard, President

TOTAL RECALL®
The Data Recovery Company™
2462 Waynoka Road. Colo Springs, CO 80915
719.380.1616 • 719.380.7022
http://usa.net/totrecal

COLOR MONITORS REPAIRED

Flat rate pricing:
RADIUS • SONY • RASTER OPS
IBM • HITACHI • MITSUBISHI

OVER 1,000 MODELS LISTED.
QUANTITY DISCOUNTS AVAILABLE

Each monitor is cleaned, adjusted to factory specs, and backed by a six month warranty on parts and labor.

For Pricing Call
800-682-5175
3E Corp. Chicopee, MA

We can save it!

DRIVESAVERS® DATA RECOVERY

800 440-1904

All storage devices • All platforms

www.drivesavers.com

400 Bel Marin Keys Bl. Novato, CA 94949
Ph: 415-382-2000

SELL

These ads work! 82% of those who read Marketplace ads buy off the page.

ADVERTISE HERE, WHERE MAC VOLUME BUYERS BUY DIRECT!
CALL 800-825-4237

Source: 1994 MacWEEK Marketplace Subscriber Stu

Mouse Pads

Custom Printed
• Your Logo Design
• Fast Turnaround

Plastic
Cloth

•Guaranteed Quality

MicroStore™
800-962-8885
FAX: 612-665-2604
LE SUEUR, MN 56058

Wrist Supports

DATA RECOVERY IN HOURS.

- Over 10 years of experience with clients worldwide including Apple, NASA, & FedEx.
- We've recovered more than half-a-million megabytes of Mac data alone.
- You only pay when there's a recovery.
- Express One-Day Service is available.
- Call 24 hours a day.

LAZARUS
DATA RECOVERY
Working at the speed of business.
800-341-DATA
415-495-5556 • FAX 415-495-5553 • RESTRICTIONS MAY APPLY
381 Clementina Street • San Francisco, California 94103

DRIVE REPAIR & DATA RECOVERY

MAC, IBM, DOS, NOVELL, UNIX, LAN, OS/2, NT SYSTEM, SUN & TAPE DRIVE

SET–UP & CONFIGURATION NETWORK COMMUNICATIONS

FREE ESTIMATES, LOW RATE HARD DRIVES ARE AVAILABLE.

DATA RECOVERY TECHNOLOGY
5029 Steven Creek Blvd., Santa Clara, CA 95051
PHN 408-249-1986
FAX 408-249-1987

800-WE-FIX-MACS

Component Level Macintosh Repair

Compare and Save!

- 24 Hour Turnaround
- Guaranteed Lowest Prices
- Longest Warranties
- FREE Diagnostics
- Largest Inventory of Parts
- Advance Exchanges
- Toll Free Tech Support
- Established 1989

PowerBook, LaserWriter & Radius Specialists!
Call for Complete Price List
(800) 933-4962 (408) 988-2334
2306 Walsh Ave, Santa Clara, CA 95051

CD-ROM PRODUCTION

CALL US FOR COMPREHENSIVE, QUALITY SERVICE:

- PREMASTERING • ONE-OFFS
- MASTERING AND DUPLICATION
- PACKAGING

DESKTOP CD RECORDERS

Toast CD-ROM Pro	$399
Sony 2x, Toast	$1199
Yamaha 4x, Toast	$2388

Blank discs and labels too!

Telephone: 415-961-4649
Fax: 415-962-5333
Internet: sales@catalogic.com
CATALOGIC® 2685 Marine Way • Mtn View, CA 94043
800-255-4020

MOUSTRAK™ Inc.

"The Original Mouspad Company"

YOUR LOGO HERE
YOUR LOGO HERE

- Drop shipments
- Promotional discounts
- Custom printing & shapes
- 48 hour turn-around for samples
- We supply the largest users in the industry

Call Toll Free 1•800•221•6687
Distributor Inquiries Welcome
Carson City, NV 89706 FAX # (702)884-1827

Data Recovery

- Expertise in Macintosh & virtually every operating system & storage device - including tape & removable media.
- 24-Hour worldwide support with on-site, weekend, and priority service.
- Professional service authorized by major manufacturers.

Ontrack® DATA RECOVERY
CA: 1-800-752-7557
MN: 1-800-872-2599
DC: 1-800-650-2410
International: +44 181 974 5522 • Japan: 81 429 32-6365
Internet: http://www.ontrack.com

MAC REPAIR & UPGRADE

800-622-7977
24 HOUR SERVICE TURNAROUND
LONGER WARRANTY
FREE DIAGNOSTICS
COMPETITIVE PRICE

- Specialize in component repairs
  - -Power Mac
  - -Power Book
  - -Logic boards
- Advance Exchanges

Phone: 408-720-9899
Fax.: 408-720-9459
720 East Evelyn Ave.
Sunnyvale, CA 94086
http://www.dttservice.com

DT&T MACINTOSH SERVICES, INC.

ACTION

You're Not the Only One Reading This Ad!
87% of MacWEEK Subscribers Look At Marketplace and Almost All of Them Act.

95% Took Some Action
82% Bought
69% Referred Information To Others

ADVERTISE HERE, WHERE MAC VOLUME BUYERS BUY DIRECT! CALL 800-825-4237

Source: 1994 MacWEEK Marketplace Subscriber Study

Macintosh Software Developers

We provide staffing services to companies developing commercial software products. Our focus is on R&D jobs for software engineers, SQA, marketing, hardware design, engineering management, etc. We're wired into the Mac development community.

Software developers register with Scientific Placement by providing a resumé that is retained in our database. They are then notified whenever a job search overlaps their qualifications and interests. We monitor certain job markets nationally and over the long term.

Interested employers are invited to inquire about our services. Developers wishing to register should send a resumé and call or eMail for a marketability assessment. Our charges are contingent upon a successful placement and are employer paid.

Scientific Placement, Inc.
http://www.scientific.com
800-231-5920 800-757-9003 (FAX) eMail: das@scientific.com
Houston: Box19949, Houston, TX 77224 713-496-6100 Fax 713-496-0373
Silicon Valley: Box 71, San Ramon, CA 94583 510-733-6168 eMail: Beth@spica.bdt.com
Boston: Kenmore Station, Box 15225, Boston, MA 02215 617-424-8372 eMail: jen@spbos.pn.com
Austin: Box 202676, Austin, TX 78720-2676, 512-260-0123 eMail: lej@zilker.net
eWorld: spi, AOL: davesmall, AppleLink: D1580, Compuserve: 71250,3001

"**Objects** over the **net**?
Easy. We've got a great **Code Library!**"

–MacXperts Programmer returns with another object over the net.

Programmers & Adventurers Wanted

MacXperts is a software development company with immediate openings for Macintosh & Newton programmers with C, C++, OpenDoc, and other experience.

Take the first step to adventure.
Call Michael Ruttle at:
1-800-356-8040 or fax / 804-358-3847
Internet: xperts@infi.net
AppleLink: xperts AOL: MacXperts
http://www.macxperts.com/~xperts

CONFIDENT

Marketplace Shoppers have the confidence, and computer savvy to purchase direct from your ad. Eight out of ten bought from Marketplace ads in the last 12 months.

ADVERTISE HERE, WHERE MAC VOLUME BUYERS BUY DIRECT! CALL 800-825-4237

77% Bought Hardware
63% Bought Software
56% Bought Supplies Or Services

Source: 1994 MacWEEK Marketplace Subscriber Study

Classified

Seybold

From Page 1

ties, as well as a PostScript Level 2 interpreter. The $4,799 package will be available for Power Macs and 680x0-based models, as well as Windows 95 and Windows 3.1. A package that lacks the graphic design features costs $1,999.

Bitstream Inc. will demonstrate a new QuarkXTension from German developer CoDesCo that will let users embed TrueDoc fonts into QuarkXPress files. Bitstream will also show Cyberbit, a single massive font that will include characters for all the world's languages, according to the company.

Canto Software Inc. will take the wraps off the Canto Cumulus XP Network Image Database for Apple Network Servers, an AIX version of its multimedia database.

It still isn't ready for prime time, but SoftPress Systems Ltd. will demonstrate some new features of UniQorn, its long-awaited QuickDraw GX page-layout program. SoftPress said the software, now due in March for $895, will become an OpenDoc container this summer.

Stepping into the ring with multimedia heavyweight Macromedia Inc., Scitex America Corp. will demonstrate ClickWorks, its forthcoming object-oriented authoring tool due in the fourth quarter for less than $1,000.

▶ **Color management.** Pantone Inc. will tighten up its ColorSync 2.0 strategy with HexWrench, a software plug-in that will let users of Adobe Photoshop or compatible applications take advantage of Hexachrome, Pantone's six-color separation process.

Color Solutions Inc. will roll out Parachute, preflight software for PostScript documents. The $1,000 package will ship for Mac and Windows 95 in March. The Mac version will use ColorSync 2.0 to perform color transformations, providing color-corrected PostScript for output devices.

Light Source Inc. will highlight SpotLight, a light box designed for use with the company's $1,295 Colortron II spectrophotometer, densitometer and colorimeter. The light table aligns the Colortron via a magnetic foot and offers an illuminated surface of 11 by 12 inches. The device costs $995, or $1,995 with the Colortron II.

Color Savvy Systems Inc. will take the lid off Mac color-management tools due in April. SMPPro, $1,000, will generate ICC (International Color Consortium) profiles for scanners, printers and monitors. ColorMouse, a spectrophotometer that works with SMPPro, will come with Color Savvy's ColorMouseTrap driver or Pantone's ColorDrive software for $1,295 or $1,495, respectively.

▶ **RIPs and servers.** Adobe Systems Inc. will announce a new, high-end production printing architecture. According to Adobe, the new technology, code-named Supra, will integrate Portable Document Format and PostScript, allowing manufacturers to create output devices that are faster and more flexible. The 26 initial OEMs include Agfa-Gevaert Group, Digital Equipment Corp., Tektronix Inc., Eastman Kodak Co. Office Imaging; Sun Microsystems Inc.; and Silicon Graphics Inc.

Light Source's new SpotLight box will accommodate the Colortron II tool and handle transparencies measuring up to 11 by 12 inches.

Heading the third-party server list will be DayStar Digital Inc.'s Genesis MP 600 multiprocessor Mac clones, now shipping. Both six-slot PCI machines have a daughtercard with four 150-MHz PowerPC 604 processors.

Live Picture Inc. will roll out Live Picture Network, which combines SGI servers and software from Torque Systems Inc. to speed rasterizing, file sharing and Open Prepress Interface conversion (see story, Page 51).

LaserMaster Corp. will show an enhanced version of its ColorMark Pro print server. The $16,995 ColorMark Pro 1600 Print Server includes a 166-MHz superscaler processor and supports up to seven simultaneous output devices.

Vivid Image Co. will demonstrate Vermillion, a print server that can RIP PostScript jobs to four output devices simultaneously. Electronics for Imaging Inc. will heat up a software upgrade for its Fiery XJ servers. The new version supports SWOP (Specifications for Web Offset Publications) emulation, overprinting, trapping and autoduplexing.

▶ **Input and output hardware.** Mannesman Tally Corp. will offer a sneak peek at the T7070, its $2,025 poster-size color inkjet printer due in June. The Adobe PostScript device will use light-fast inks that are water- and fade-resistant. It will print sheets measuring up to 17 by 23.3 inches at resolutions of up to 360 and 720 dpi, respectively, in color and black and white.

The CF900 color copier will top Minolta Corp.'s marquee; the new $24,995 device is the first color copier able to output full-bleed tabloid prints.

Agfa, a division of Bayer Corp., will launch a raft of new output devices: the $135,000 Avantra 30, a four-up internal drum imagesetter; and new models in its AccuSet Plus line of capstan imagesetters.

Shinko Technologies Inc.'s A-sized ColorStream II DP and tabloid-size ColorStream II DPL will offer continuous-tone, full-bleed output and 300-dpi resolution.

Juno Enterprises Imaging will unveil its JEI CP4000 Desktop Drum Scanner. The $16,000, 36-bit device boasts resolutions of up to 4,000 dpi. EnCAD Inc. will shine the spotlight on two wide-format plotters, including the NovaJet Pro 50, which handles 49.5-inch-wide media (see story, Page 10).

▶ **On-line publishing.** Webmasters may get relief from the hassle of dead links on their Web sites when Pacific Coast Software ships its $79.95 SiteCheck utility in March. It will verify links between pages on a site and elsewhere on the Internet.

Astrobyte LLC will announce Version 2.0 of BeyondPress, a $595 XTension that lets users convert XPress files to HTML. The upgrade handles images more flexibly, lets users color backgrounds and links, and converts tabular data into HTML tables.

FutureTense Inc. will give Mac users a taste of Java with FutureTense Texture, a Web-page authoring system that draws on the Sun technology (see story, Page 10). Sun's JavaSoft division will also be on hand, demonstrating its Java development kit.

Finally, Macromedia will try to jolt users with Shockwave for FreeHand and Director, two plug-ins for Netscape Navigator 2.0 (see story, Page 10). □

Keeping You Connected

5PM TERM

Complete Desktop to Host Connectivity

Rely on White Pine's 5PM Term for complete and easy access to any IBM mainframe, AS/400, UNIX/VAX, or Hewlett Packard host from your PC or Macintosh.

Automate every day tasks and customize your desktop using 5PM Term's powerful user defined macros, scripting, and keyboard remapping. We also offer ftp client and server, and network and serial connections.

Combine all this with 5PM Pro, White Pine's powerful graphical user interface builder, and you have all the tools you need to keep you connected.

White Pine Software, Inc., 40 Simon Street, Nashua, NH 03060-3043, 603-886-9050
FAX: 603-886-9051, Internet: info@wpine.com
International Internet: euro_info@wpine.com

TN3270 TN5250 HP700 VT420 SCO-ANSI PC-ANSI
TCP/IP SLIP/PPP LAT SNA FTP Kermit ZModem

Sales Hotline 800-241-PINE http://www.wpine.com

White Pine

Corel

From Page 1

Corel said the entire suite, which uses more than 300 Mbytes of hard disk real estate on Intel-standard PCs, will occupy less than 100 Mbytes of hard disk space on the Mac and will require 16 Mbytes of RAM.

Corel has targeted the PC version of CorelDraw at business-graphics and home users. However, the Mac version, which will be available only for Power Macs running System 7.5 or higher, will angle for the higher-end territory dominated by Macromedia Inc.'s FreeHand and Adobe Illustrator.

Analysts expressed skepticism about these plans. "[Corel] is not going to wrest Illustrator and FreeHand users away," said Joan-Carol Brigham, senior analyst with International Data Corp. of Framingham, Mass. "They're banking on their Windows installed base … to carry them through on the Mac side."

Nevertheless, the company said it hopes that the suite's cross-platform compatibility coupled with its long track record on the PC side will give it an edge on the competition. "The [Mac version] is based upon proven technology that we've been refining on the Windows platform for years now," said Haris Majeed, Corel Mac product manager.

Corel's PC market share is considerable; an IDC study showed that in 1995 CorelDraw 5 and 6 captured 67.5 percent of unit sales for graphics software.

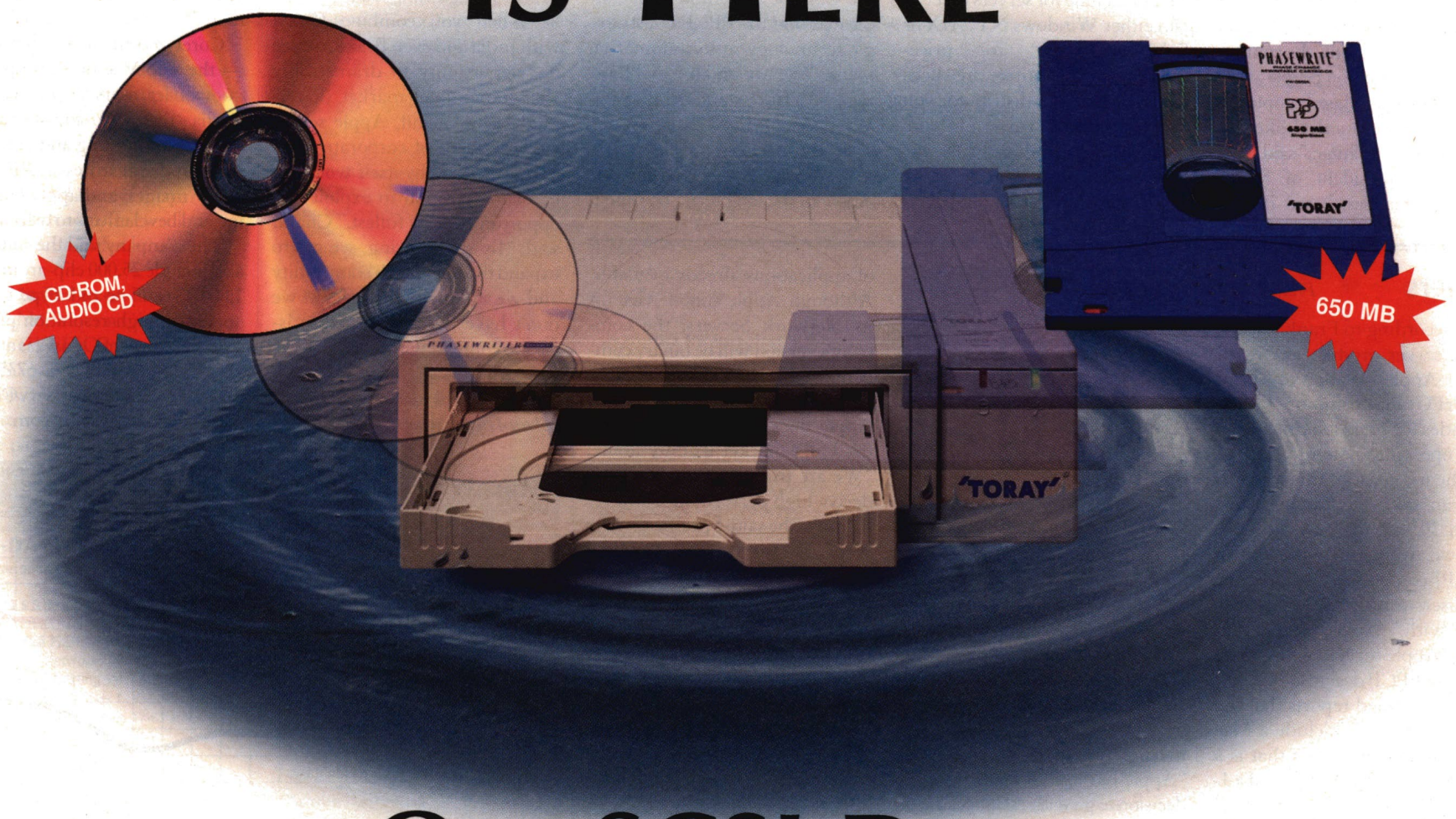
To woo notoriously picky Mac users, Corel is adding a variety of Mac-like tweaks in the new version, including a revamped interface with pop-up menus, dialog boxes, floating tool palettes and Apple Guide.

Although the Mac version's feature list will not deviate greatly from the PC version's, Corel said the products will support ColorSync 2.0 profiles and QuickDraw GX. The company is also drawing on AppleScript instead of its own scripting language.

CorelDraw 6 for the Mac will include vector drawing tools; lens effects such as fisheye, wireframe and freeze; special effects such as PowerClip and PowerLines; and several fills.

See Corel, Page 84

THE NEW PD STANDARD IS HERE



ONE SCSI DRIVE
BOTH 4X CD-ROM AND REWRITABLE OPTICAL

It's the Phasewriter Dual™ with PD technology from Toray and it transcends existing standards with more flexibility than any other optical drive. Phasewriter Dual reads CD-ROMs at quad speed and reads or writes to optical disks at a blistering .87 MBytes/second transfer rate. Just drop a CD-ROM into our new Phasewriter Dual or switch to a 650 MByte single-sided rewritable disk for portable data exchange. The Phasewriter Dual is setting new standards with higher capacity and CD-ROM compatibility at a much lower cost.

And it's Fast, Fast, Fast!
Plug this drive into any platform hardware or network and you're ready to go.

The single front loading tray holds CD-ROMs or Toray's CD-size rewritable optical (PD)disks. Because it is a SCSI drive, the software identifies and mounts either media automatically.

For information on drives, media or the retailer nearest you, call **1-800-TORAY-PD**.

PHASEWRITER DUAL™

by

'TORAY'

email: info@toray.com Internet: http://www.toray.com

©1995 Toray Marketing & Sales (America), Inc.

Motorola

From Page 1

torola has paved the way for Mac OS machines in China through Nanjing Power Computer Ltd., a joint venture with Panda Electronics Group Co. of Nanjing, China. Panda will distribute systems licensed from Motorola in China.

Analysts said there is a huge emerging market for computers in China. While most recent technology purchases have been for telecommunications and consumer electronics, analysts noted that, out of its 1 billion citizens, the country has about 200 million people affluent enough to purchase computers.

"The upside of a deal like this certainly could be huge," said Kurt King, vice president of Montgomery Securities, based in San Francisco. "While I'm not an expert on the Chinese market, even using common sense Apple has the chance to sell many millions of Mac OS licenses if the deal works."

Some estimates put the five-year potential of the China deal at $1.25 billion in Mac OS licensing revenues.

Guglielmi said that the joint venture with Panda will focus on home and education markets. Motorola sees the Mac as a natural client machine for servers that can run either Windows NT, AIX or Solaris. "These are price-conscious, competitive markets, but with the right distributor you can be an effective player," he said.

Analysts said that while the prospects are good, there are many unknowns. Apple does not have a strong brand recognition in China.

"China is a scary market, and this deal is very speculative," King said. However, he added that Motorola is the one Western company that has the track record to show it can overcome these obstacles. Motorola currently has lucrative sales of cellular products in China.

The foreign markets are also more open to alternative OSes such as the Mac. Guglielmi said the Chinese government has indicated that the PPCP is a strategic technology in its automation plans. "We are on an equal footing [with Intel-standard PCs and Windows OS] in China; no one owns the market," he said.

"This kind of deal is positive for Apple in the long term, because it helps address the issue of sustainability of the platform," King said. But, he said, the market's financial perspective is uncertain and there has been no word on how Apple would benefit financially.

Apple said that emerging markets can fuel growth for the next three to five years. The Mac OS also offers many features attractive to those markets, such as WorldScript and the recently released Chinese Dictation Kit (see 12.04.95, Page 4).

"When you combine China with India and even Brazil, we see the opportunity to dramatically change our total market share," said Satjiv Chahil, Apple senior vice president of corporate marketing. "Apple by itself wouldn't be in the position to exploit this opportunity to its fullest," Chahil said. "By sublicensing, we get to expand the Macintosh community and we still make money, but we don't have the infrastructure issues to contend with." □

Andrew Gore and Mark Hall contributed to this report.

Corel

From Page 82

The feature set for the image-editing component is not yet finalized, although Corel emphasized that the product's capabilities will be closer to Microspot USA Inc.'s PhotoFix than Adobe Photoshop.

CorelDream 3D, based on Ray Dream Inc.'s Ray Dream Designer, will boast spline-based 3-D modeling, alpha channel compositing, ray tracing, texture mapping, 3-D painting tools and more than 750 3-D clip-art models.

Corel said the texture program — the sole Mac-only component — will let users create natural-media textures; adjust surface types, color lighting and grain angles; render textures as PICT or TIFF images; and apply embossing and bevel effects to bit maps.

The company said the suite will also include 25,000 clip-art images, 1,000 TrueType and Type 1 fonts, and 1,000 high-resolution photos.

Corel Corp. of Ottawa is at (613) 728-8200 or (800) 772-6735; fax (613) 761-9176; custserv@corel.com; http://www.corel.com. □

Servers

From Page 1

tems, according to Frank Nicolo, Apple server product line manager, Apple plans to offer PowerPC Platform, or PPCP, upgrades for users looking to run other operating systems.

"The nice part of this server is you can take the motherboard out in 30 seconds," Nicolo said. "So we want to work on a [PPCP]-compatible logic board that users can upgrade this machine with." Nicolo added that future Apple servers will also be based on PPCP designs.

Nicolo denied reports that the Network Servers include a Mac ROM, but implied that that is a future possibility. Apple used a 4-Mbyte ROM in the servers, of which the AIX Open Firmware drivers take up about 1 Mbyte. "If we wanted to go to the Mac OS, there is enough space to do it," he said. "If we ever wanted to add another OS, we could."

Nicolo said Apple could also add symmetric multiprocessing. "IBM is working on a PowerPC 604 [symmetric multiprocessing]-compliant chip, so we could do a dual-processor upgrade card," he said.

Of course, the key feature of Apple's new servers — as well as the most un-Apple-like — is AIX. "Apple has had to make a tough decision to go with AIX because of the fear factor associated with Unix," said Dano Ybarro, director of business development at Information Presentation Technologies Inc. (IPT), a developer in San Luis Obispo, Calif. "Can you create a high-performance server built on the Mac OS? The answer is no," Ybarro said. "Apple made a good choice with AIX. It's solid."

According to Nicolo, Apple chose AIX, IBM Corp.'s version of Unix, because it runs on the PowerPC chip and has thousands of applications already available. Although Apple tuned AIX for its Network Servers, the company's version will be binary compatible with IBM's flavor of AIX.

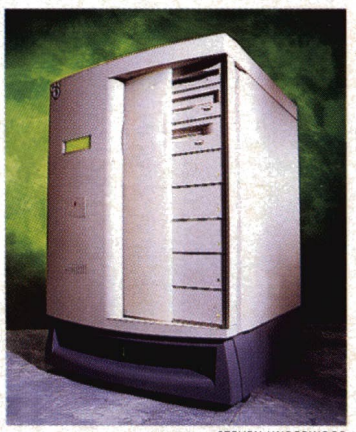
However, according to Nicolo, Apple does not intend to make the Unix market its only home. "We are using Unix as a tool to derive high performance and reliability," he said. Specifically, the Network Servers are designed for publishing production as well as for medical, biotech and higher education. "The servers are not restricted to publishing, but that is the beachhead," Nicolo said.

Ybarro said he hopes the Network Servers will help his company improve its foothold in the publishing market. IPT will bundle several applications with Apple's servers, including AppleShare on Unix and its CanOPI Open Prepress Interface (OPI). "If you look at the printing shop, you see Sun workstations running OPI. The multitasking and networking capabilities of Unix make for an ideal OPI server," he said.

Nicolo said Apple is targeting the machines at sites with Unix servers tied to Mac clients. "We see a lot of Unix servers in Mac accounts," he said. "These machines are for customers who want a client-server solution from Apple."

But one developer remained unconvinced: "I don't think it is going to last long." The developer, who said his company plans to write software for Apple's new Mac OS-based servers (see Page 4) but not for those using AIX, is concerned about the track record of Apple's previous Unix box, the Workgroup Server 95 running A/UX: "This is the same thing. I think they should stick to their knitting." □

Joanna Pearlstein contributed to this report.



STEVEN UNDERWOOD

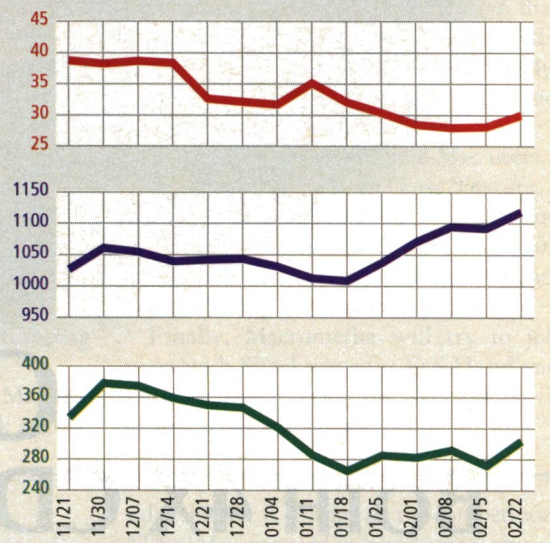
The front of the Network Server gives users easy access to the storage bays and power supplies.

How Apple's Network Servers stack up

PRODUCT	CONFIGURATION	PRICE
Apple Network Server 500/132	32/2GB/CD 132-MHz 604	$10,969
Apple Network Server 700/150	32/1GB/CD 150-MHz 604	$11,829
IBM RS/6000 E20	32/2GB/CD 100-MHz 604	$14,290
Silicon Graphics Challenge S	32/535MB 133-MHz MIPS R4600	$9,500
Sun SPARCstation 20	32/1.05GB 75-MHz SuperSPARC-II	$15,995*
Sun Ultra1 Model 140	32/1.05GB 143-MHz UltraSPARC-I	$16,495*
Sun Ultra1 Model 170E	32/1.05GB 167-MHz UltraSPARC-I	$22,495*

** Includes 17-inch color monitor.*

StockWatch



	02.22.96 CLOSE	WEEKLY CHANGE
Apple	29.88	1.88
MacWEEK Composite*	302.65	31.88
SOFTWARE DEVELOPERS		
Adobe	36.88	1.06
Caere	8.75	0.13
CE Software	3.19	0.31
Fractal	5.38	-0.25
Graphsoft	15.00	0.50
Insignia	5.75	-0.13
Intuit	67.63	12.38
Macromedia	36.63	3.13
Microsoft	102.50	4.00
Novell	12.63	-0.38
Oracle	54.13	1.25
Symantec	13.56	0.81
STORAGE		
Conner	25.75	0.00
Iomega	16.13	1.88
Pinnacle	8.13	-3.88
Quantum	17.25	0.00
Seagate	66.00	4.13
SyQuest	7.50	2.38

	02.22.96 CLOSE	WEEKLY CHANGE
PERIPHERALS VENDORS		
AmeriQuest	0.75	-0.06
Asanté	7.00	-0.88
Focus	4.25	0.25
Global Village	15.88	1.13
HP	103.13	16.75
QMS	5.25	0.00
Radius	1.31	-0.25
Shiva	82.50	10.63
Tektronix	46.88	2.13
Truevision	5.50	0.00
DISTRIBUTORS		
CompUSA	38.50	5.00
IE	6.38	0.25
Merisel	2.56	-1.13
Tech Data	14.63	1.31
INDUSTRY INDICATORS		
Compaq	51.50	2.00
IBM	124.25	6.63
Intel	61.00	3.50
Motorola	58.50	3.63
SGI	27.75	0.75
NASDAQ	1117.11	26.57

**The MacWEEK Composite is calculated by adding the stock prices of the following companies: Apple, Adobe, Asanté, Caere, CE Software, Global Village, Intuit, Macromedia, Radius, Shiva, SyQuest and Truevision. Source: Nordby International Inc.*

On-line this week

ZDNet **Plug-in and play** With the release of the final Netscape Navigator 2.0 for the Mac, Web surfers can put away their beta versions of Navigator 2.0 and start installing beta versions of Navigator 2.0 plug-ins. For the latest scoop on available and upcoming plug-ins, see MacWEEK's comprehensive list at http://www.zdnet.com/macweek/plugins.html.

Also available this week
Check out our expanded version of this issue's Photoshop shootout (http://www.zdnet.com/macweek/1008/rev_photoshop.html), and don't miss this week's daily Seybold Report (http://www.zdnet.com/macweek/seybold_0296/index.html).

Where to find us on-line
In ZD Net/Mac on CompuServe, the MacWEEK Forum is at go zmc:macweek and the MacWEEK News menu is at go zmc:mwnews. On the Web, our home page is at http://www.zdnet.com/macweek/.

ZIFF-DAVIS PUBLISHING CO.
Chairman and CEO Eric Hippeau

BUSINESS MEDIA GROUP
President Ronni Sonnenberg
Executive Vice President Claude P. Sheer
VP, Magazine Networks Joseph Gillespie
VP, Central Advertising Sales Bob Bader
VP, Product Testing Mark L. Van Name
VPs Don Byrnes, Al DiGuido, Dan Farber, J. Samuel Huey, Michael Miller, Paul Somerson, Jim Stafford
Executive Director, Ziff-Davis Magazine Networks Ellen Atkinson
Managing Director of Ziff-Davis Preferred Customer Program (ZDPC) Lucy Wohltman
Directors, Ziff-Davis Magazine Networks Anne Fitzpatrick, Mark Glasner, Michael Krieger, Jeff Lehman, Kelly Lowman, Melinda Maginn
Marketing Director, Ziff-Davis Magazine Networks Michael Perkowski
Marketing Director, Ziff Davis Magazine Networks/ZDPC Jeff Bruce
Director of Public Relations Brenda Wheeler
Director of ZD Benchmark Operation Bill Catchings
Director of ZD Labs Robert W. Kane

ZIFF-DAVIS PUBLISHING CO.
President, Consumer Media Group J. Scott Briggs
President, Ziff-Davis Marketing and Development Jeff Ballowe
President, Computer Intelligence/InfoCorp Bob Brown
President, International Media Group J.B. Holston III
Senior VP, Circulation Baird Davis
VP, Assistant to the Chairman Tom McGrade
VP, Business Development T.L. Thompson
VP, Circulation Services James F. Ramaley
VP, Corporate Research and Analysis Elda Vale
VP, General Counsel and Secretary J. Malcolm Morris
VP, Human Resources Rayna Brown
VP, Chief Financial Officer Timothy C. O'Brien
VP, Planning Darryl Otte
VP, Marketing and Development Group Herbert Stern
VP, Alliance Marketing Janet Ryan
VP, Marketing Services Jim Manning
VP, Production Roger Herrmann
VP, Technology Bill Machrone
Treasurer Thomas L. Wright
Chief Information Officer Wellington Y. Chiu
Production Director Walter J. Terlecki
Director of Licensing Gertrud Borchardt
Director of Public Relations Gregory M. Jarboe

Products in this issue

ACCOUNTING
Best!Ware MYOB 49
Big Software Big Business 49
CheckMark MultiLedger 49
EveryWare Connected Accounting 49
Great Plains Dynamics, Great Plains Accounting 49
Intuit MacInTax, TurboTax, QuickTax 1040A/EZ 6
Intuit QuickBooks Pro 49
Maconomy Maconomy 49
Peachtree Peachtree Accounting 49
Softek A4 49
State of the Art Flexware, Mac P&L 49

COMPUTERS & SYSTEM SOFTWARE
Apple Epic 86
Apple Mac OS; Network Server 500, 700; Shiner; Workgroup Server 9150 1
Apple PowerBooks, PCI Power Macs 49
Apple Workgroup Server 7250, 8550 4
Apple/OSF Linux 23
DayStar Genesis MP 600 1, 39
Exponential PowerPC-compatible chips 6
Intergraph TD-400 39
Sun Ultra1 Creator 3D 39

DATABASES & DATABASE TOOLS
Canto Canto Cumulus XP 1

DESKTOP PUBLISHING & TYPOGRAPHY
Bitstream Cyberbit 1
SoftPress UniQorn 1

DOCUMENT EXCHANGE APPS
Adobe FrameViewer 5, FrameViewer Retrieval Tools 6

GRAPHICS HARDWARE
Color Savvy ColorMouse 1
Epson PhotoPC 4
Light Source SpotLight 1
Mirus turbo IIE 12

GRAPHICS SOFTWARE
Adobe Photoshop 39
Amiable PhotoPrint Designer 1
Color Savvy SMPPro 1
Color Solutions Parachute 1
Corel CorelDRAW 1
MetaTools Bryce 2 1
Pantone HexWrench 1
Quark XPosure 86
Total Integration FASTedit/IVUE 51

MULTIMEDIA
Macromedia Director 5 86
Scitex ClickWorks 1

NETWORKS
Apple AppleShare 3.6.1 49
Cabletron Fast Ethernet Hubs; FastNet 10, 100; MMAC SmartSwitch; SmartSwitch chassis; Workgroup SmartSwitch 16
Live Picture Live Picture Network 1, 51

ON-LINE COMMUNICATIONS
Adobe SiteMill 1
Apple Apple Remote Access 3.0 16
Apple eWorld, QuickTime Conferencing plugs-in for Netscape Navigator 86
CE Software WebArranger 2.0 16
FutureTense FutureTense Texture 1, 10
MacPPP 2.0.1, FreePPP 1.0.5 16
Macromedia Shockwave 1, 10
John Norstad MacTCP Switcher 16
Pacific Coast SiteCheck 1
Supra 28.8-Kbps fax modem 49
David Walton MacTCP Netswitch 16

PRINTERS & PRINTING TOOLS
Adobe SUPRA 1
Agfa AccuSet Plus, Avantra 30 1
Agfa Chromapress 24
AM Multigraphics Xeikon DCP-1 24, 30
Barco DCP-1PrintStreamer 24
Canon CLC 24
ColorBus Cyclone 24
Dice DiceNet 24
Electronics for Imaging Fiery XJ 1, 24
EnCAD NovaJet 4, NovaJet Pro 50 10
Heidelberg QuickMaster DI 46-4 24, 32
IBM 3170 Full Color Digital Printer 24
Indigo E-Print 1000 24
Kodak LionHeart Printing System 28
LaserMaster ColorMark Pro 1
Mannesman T7070 1
Minolta CF900 1
Scitex Spontane 24, 32
Shinko ColorStream II DP, II DPL 1
T/R Systems MicroPress 24, 30
Vivid Vermillion 1
Xerox Docutech Production Publisher 135 28
Xerox MajestiK 24

PRODUCTIVITY APPS
Claris ClarisWorks 4

PROGRAMMING/ DEVELOPMENT TOOLS
Sun Java Development Kit 1

SCANNERS & OCR
Juno JEI CP4000 1
Visioneer PaperPort 23

SOUND & MUSIC
BIAS Peak 10

STORAGE
Direct Connections Spectra 4000/20 DAT jukebox 6
Pinnacle Apex, Vertex 4
Quantum Bigfoot, Fireball TM drives, Viking drives 6

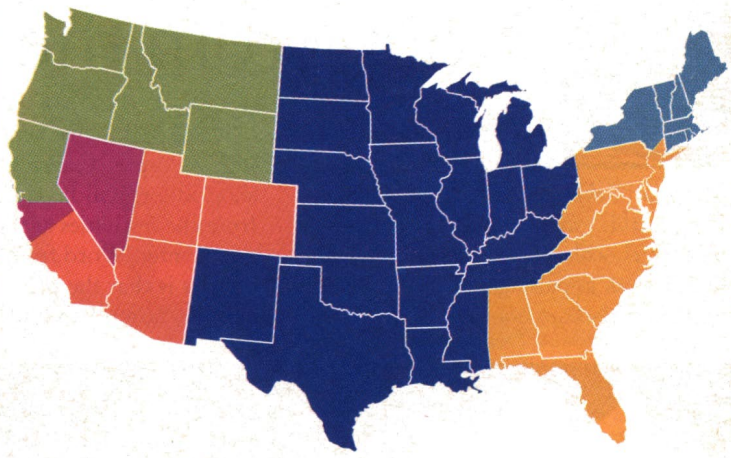
UTILITIES
Connectix Speed Copy 1.1, Speed Doubler 49
Optima XChange 6

Looking ahead

SOLUTIONS IN THE WORKS
We want to know the difficulties, successes and failures you've experienced in the areas below. Send your comments to solutions@macweek.com. Please include information on how to contact you.

- If you run a small business, what low-end e-mail packages are you using? Are they adequate or do you feel like something is missing?
- Photoshop users: Relate your experiences to MacWEEK regarding what techniques you have used for Photoshop acceleration.

REVIEWS IN THE WORKS
- mFactory's mTropolis 1.0
- Power Computing's PowerCurve 601/120
- Global Village's OneWorld Combo



MacWEEK sales offices

John Blake
Group Publisher
(617) 393-3075

Cheri L. McKeithan
Group National Sales Manager
(415) 378-5680

MarketPlace
(800) 825-4237

Display ads

Northeast [1]

Sharon Kiernan
District Sales Representative
(617) 393-3060

Mid-Atlantic/ Southeast [2]

Laura Mosier
District Sales Representative
(617) 393-3692

James Loza
Account Executive
(415) 378-5677

Midwest

Tom Hernandez
District Sales Manager
(312) 214-7343

Dan Hudson
Account Executive
(415) 378-5622

Northwest [3]

Ellen Skugstad
District Sales Manager
(415) 378-5657

Brigid Dombrowski
Account Executive
(415) 378-5658

South Bay [4], Nevada

Chris Marrow
District Sales Representative
(415) 378-5651

Casie Davis
Account Executive
(415) 378-5630

Southwest [5]

Dale Hansman

[1] Includes New Brunswick, Newfoundland, Prince Edward Island, Quebec, Manitoba and Ontario, Canada

[2] Includes New York metropolitan area

[3] Includes Northern California north of San Mateo; Alaska; and Alberta and British Columbia, Canada

[4] Includes San Francisco Bay Area south of the San Mateo Bridge to San Luis Obispo

[5] Includes Southern California south of San Luis Obispo, Arizona, Utah and Colorado

Advertiser Index

Adaptec 47
Adobe Systems 8–9
Apple 11, 33
APS Technologies 56-57
CE Software 7
Chena Software 43
ClubMac 20-21, 54-55
Corel 88
CRA 58
Dantz 38
Dayna 17
Direct Connections 64
DirecTech 52
Farallon 5
FWB 87
Graphsoft 86
InterCon Systems 34
La Cie 60-61
LaserMaster 29
Linotype-Hell 27
The LLB Company 62-63
MAC Xtra 65
MacMall 45
MacSale International 72
MacTemps 19
MetaTools 2
Microsoft 14-15
Olympus 48
Power Computing 36-37
ProDirect 53
Shreve Systems 77
Specular International 13
Syex 59
Tahoe Peripherals 69
Thursby Software 46
Toray 83
Total Integration 12
Viewsonic 35
Virginia Systems 42
VisionTek 31
White Pine Software 18, 82
Xinet 6

Notes from the casting couch

The Knife is assiduously boning up for his sojourn at Seybold's publishing fiesta in Boston this week, sucking down Toblerone chocolate bars and tiny bottles of liquor at an appalling rate in preparation for the hotel-room honor bar.

And speaking of acute alcohol poisoning: XPosure, Quark's wannabe Photoshop killer, will be conspicuously absent from the festivities at the Hynes Convention Center. Word from the Knife's detox experts is that the project is slipping into oblivion faster than Phil Gramm.

Director's cut

On the other hand, some industry celebrities seem ready to come clean without the help of Betty Ford. Take Macromedia, which has set the stage for a March 5 debut of Director 5.

The Knife's stage managers say the aging multimedia star has gotten a major interface lift that rivals Joan Collins'; the cosmetic surgery brings it in line with SoundEdit and the rest of the Macromedia cast. Its performance also screams "Oscar," show-biz insiders say, hitting twice the speeds of Version 4.

Supporting characters include on-the-fly anti-aliasing and support for Rich Text Format as well as the ability to juggle external casts. The revamped Director will also co-star with programs such as FreeHand and Photoshop, thanks to the upgrade's Xtras technology.

Hold my calls

Photogenic power schmoozers looking to close their next cyberspace deal will be able to parade their bronzed mugs within Navigator 2.0's main window, thanks to a new videoconferencing plug-in from Apple. The Knife is capping his teeth and applying scads of Grecian Formula in anticipation of the QuickTime Conferencing plug-in for the ubiquitous Netscape Web browser. Word to the wise: Hit those tanning salons before Q2, when this digital dingus debuts.

Roman holiday

Meanwhile, leathery Italian soap opera star Olivetti is finally getting ready for its close-up. The Knife's talent scouts say this week may bring a licensing deal between the lusty Latin typewriter manufacturer and Apple, consummating months of romantic tension that has been a constant subplot in the corridors of Cupertino. The love scene should play well in the Italian market, and Germany may get a piece of the action as well.

Fistful of pink slips

And while we're on the subject of Mediterranean film noir: The Knife's faithful readers will no doubt remember his recent evocation of Sergio Leone when discussing eWorld's trials and tribulations. Since then, new marshal Gil Amelio seems to have cast himself in the Clint Eastwood role. As part of his campaign to clean up the company's roughest terrain, Apple's hired gun has set his sights on the horse-whipped on-line service. According to terrified townies, the three-phase shutdown will start March 1, when the company stops registering new users. The system goes off-line April Fools' Day and shuts down permanently on May Day.

A touch of gray

Speaking of film noir: Fans of black-and-white features may be horrified to learn that colorization is the way of the future within Apple's laptop line. After pricing out manufacturing costs for its forthcoming CD-equipped model, code-named Epic, Apple has concluded that the difference between a gray-scale LCD and a dual-scan color version was negligible. Post-production is speeding along; the Knife suspects that Epic will premiere in May or June, comfortably ahead of schedule. □

Dear eWorld Team: Wash down that bile by supplying a mugful of tasty tips! Spill your guts to the Knife at (415) 243-3544; fax (415) 243-3651; mac_the_knife@macweek.com.

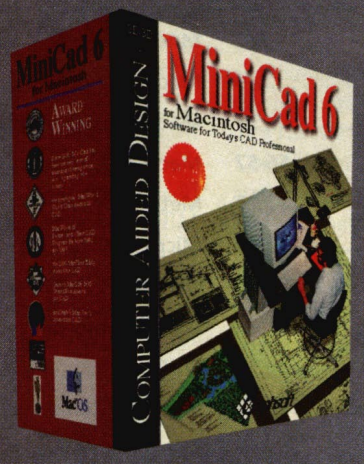
1996 Macworld WORLD CLASS AWARD WINNER

SHOULD MINICAD 6 BE YOUR CAD SOLUTION?

- A proven market leader that handles any job; 2D, 3D, cost estimation and presentations
- A program tailored to your needs. Specialized tools for many design industries: A/E/C, mechanical engineering, landscape, space planning, food service, theater/lighting design, HVAC, and more
- A program that's easy to use, easy to buy and easy to customize to your specifications
- A cross platform program for both Macintosh and Windows systems
- A program from a stable company that stands behind its products with aggressive R&D
- A program with a RISK-FREE way to try it before you commit

MiniCad 6® ...

THE FULL-FEATURED CAD PROGRAM with INTEGRATED PROFESSIONAL SOLUTIONS



MINICAD 6: A COMPLETE CAD PACKAGE!
MiniCad 6 has just what you're looking for: a complete 2D/3D drafting environment, powerful database and built-in macro language. A QuickTime™ 3D animation tool and QuickDraw™ 3D file support to add sizzle to your presentations. Even digital terrain modeling! All highly organized and very easy to use!

FREE DESIGN AND DRAFTING TOOLKIT™
Packed with thousands of symbols, tools, commands, templates, parametrics, formatted reports, worksheets and sample files targeted at specific industries. No extra symbol libraries to buy! These specialized feature sets are powerful, complete and already in MiniCad 6, giving you both design flexibility and targeted industry solutions.

INTERNATIONALLY RECOGNIZED
Now in its 10th year, Graphsoft's MiniCad is the best-selling CAD program for the Macintosh, utilized by design professionals in over 80 countries and 12 languages.

TRY IT RISK-FREE FOR 30 DAYS!
When you buy MiniCad 6 from a participating dealer, you'll get Graphsoft's no-hassle 30 day money back guarantee. You'll also get 18 months of free technical support, a 24 page quarterly newsletter and multi-media CD that provides both Quicktime movies on the operation of each tool and command, and real working sample files from around the world.

MONEY BACK GUARANTEE 30 DAY AT PARTICIPATING DEALERS

Diehl Graphsoft, Inc.
Graphsoft®
A NASDAQ TRADED COMPANY
Makers of MiniCad 6, Blueprint and Azimuth for Macintosh. MiniCad 6 for Windows coming soon!

MACINTOSH WINDOWS

For more information please contact Graphsoft at 10270 Old Columbia Road, Columbia MD 21046 1-800-413-0936 or 410-290-5114 Fax: 410-290-8050, Marketing/ Sales: www.graphsoft.com In Canada call Paxar at 1-800-260-0905 For Academic pricing call 1-800-531-3227

QuickTime, QuickDraw and Macintosh are trademarks of Apple Computer. Windows is a trademark of Microsoft. MiniCad and Design and Drafting Toolkit are trademarks of Diehl Graphsoft, Inc.

No matter how you look at it.

Apply The Hammer.™ **The SledgeHammer disk array from FWB is the right tool for the right job.** Today's demanding digital video, graphics and multimedia applications require gigabytes of storage space and transfer rates that only the FWB SledgeHammer can deliver.

Powered by the award winning PCI SCSI JackHammer™ and FWB's own RAID ToolKit™ disk array management software, SledgeHammers deliver sustained data transfer rates up to **33 MB/sec**.

Increase productivity with graphics files that open in a flash. Produce, edit and finish broadcast quality digital video without dropping a single frame. Run your file server's I/O channel faster no matter how many users are on line.

No matter what your application, FWB has the right tool for you. FWB's comprehensive line of world class storage solutions includes high performance RAID subsystems, hard disks, removables, DAT, DLT and CD-ROM recordable drives.

Call **(415) 325-4FWB** today for the reseller nearest you and Apply the Hammer to your next project.

NewMedia Magazine 1996 Hyper Award

FWB SledgeHammer Series
Hard Disks/Arrays

AV Video Platinum Award — Innovation in Technology

SledgeHammer Wide/II
New Age Video Mass Storage

Designed for Macintosh with PCI

score card MacWEEK ◆◆◆◆

PCI SCSI JackHammer
MacWEEK 8/28/95

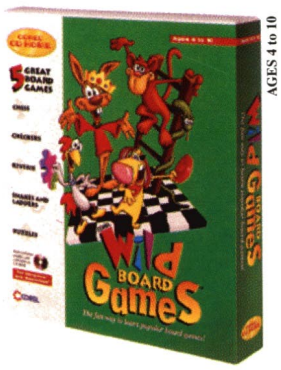
© 1995 FWB, Inc. FWB, Hammer and SledgeHammer are registered trademarks of FWB, Inc. RAID ToolKit and PCI SCSI JackHammer are trademarks of FWB, Inc. All other trademarks are the property of their respective owners.

SledgeHammer®
disk arrays

FWB® incorporated

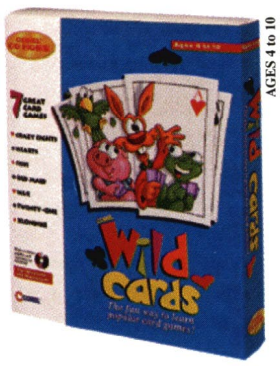
Phone: (415) 325-4392
Fax: (415) 833-4655
http://www.fwb.com

THE WORLD LEADER IN GRAPHICS AND MULTIMEDIA



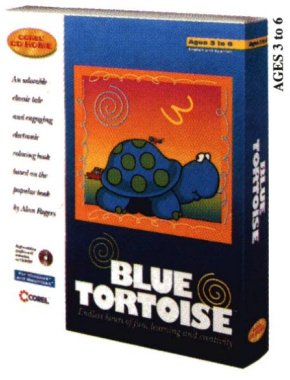
Wild Board Games™

The fun way to learn popular board games
For Macintosh® and Windows® 3.1
$24.95* S.L.P.†



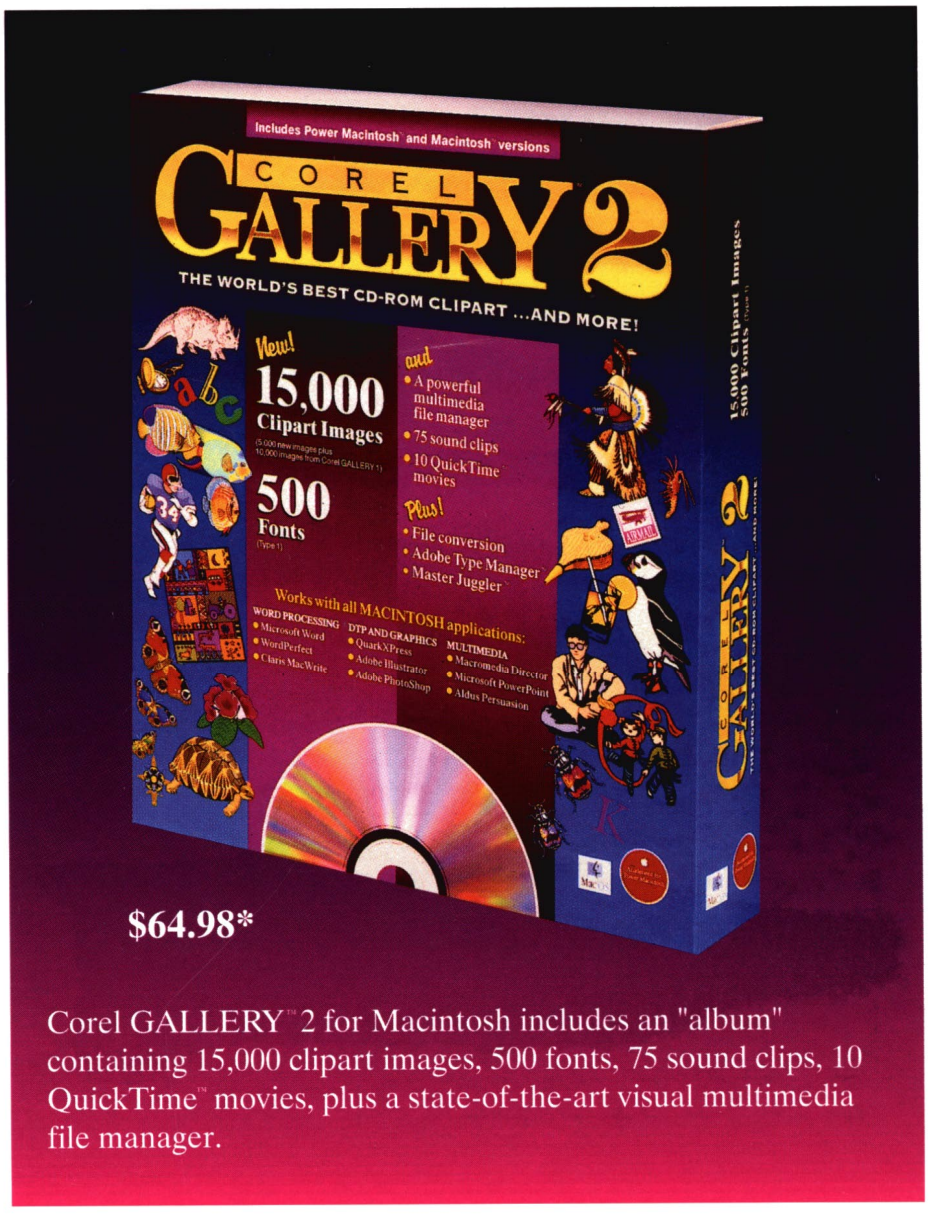
Wild Cards™

The fun way to learn popular card games
For Macintosh® and Windows® 3.1
$24.95* S.L.P.†



Blue Tortoise™

Read, color and race to the picnic with Blue Tortoise
For Macintosh® and Windows® 3.1
$24.95* S.L.P.†

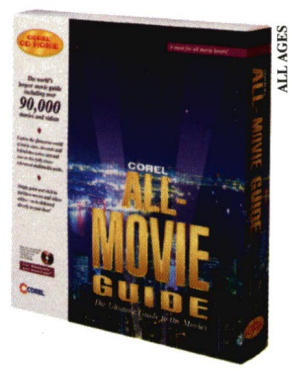


$64.98*

Corel GALLERY™ 2 for Macintosh includes an "album" containing 15,000 clipart images, 500 fonts, 75 sound clips, 10 QuickTime™ movies, plus a state-of-the-art visual multimedia file manager.

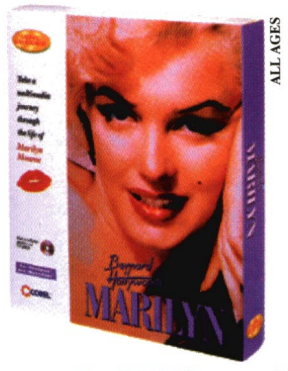
Nikolai's Trains™

An interactive journey across the landscape of a child's imagination
For Macintosh® and Windows® 3.1
$24.95* S.L.P.†



All-Movie Guide™

The ultimate guide to the movies
For Macintosh®, Windows® 95 and Windows® 3.1
$24.95* S.L.P.†

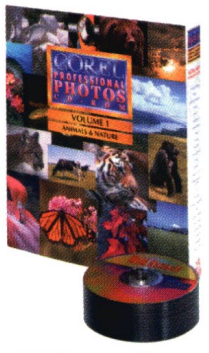


Bernard of Hollywood's™ Marilyn

A multimedia journey through the life of Marilyn Monroe
For Macintosh® and Windows® 3.1
$24.95* S.L.P.†

Corel Professional Photos™ on CD-ROM

The world's leading photo CD-ROM collection
Individual titles: $18.98* each



Volume Sets

2,500 photos on 25 CD-ROMs in each set
$139.98* each

Corel® Stock Photo Library 1 and 2

20,000 royalty-free high-resolution photos on 200 CD-ROMs in each library
$899.98* each

From the makers of CorelDRAW™.

Enter the Corel $3,000,000 World Design Contest! (September '95 to July '96) To receive a faxed copy of the contest rules and an entry form, please call: 1-613-728-0826, ext. 3080, Document # 1125. To leave a message: 1-613-728-0826, ext. 81609. To send a fax: 1-613-728-2891.

All products and company names are trademarks or registered trademarks of their respective companies.

The Mac Zone™
Your Catalog SuperStore
1-800-248-0800

*US$ plus applicable taxes. †Suggested list price. Dealer may sell for less.

http://www.corel.com
Call now for faxed literature!
1-613-728-0826 ext. 3080
Document #1051